THE ROLE OF ENABLING BUREAUCRACY AND ACADEMIC OPTIMISM IN ACADEMIC ACHIEVEMENT GROWTH

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in the Graduate School of The Ohio State University by

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ABSTRACT

Collective teacher efficacy, faculty trust in students and parents, and academic emphasis are school characteristics that have been found to be associated with academic achievement, even when controlling for socioeconomic status. Researchers have theorized that these three characteristics are dimensions of a single latent trait of schools, called academic optimism. Factor analysis of survey results from forty elementary schools in this study supported that theory.

The construct of enabling bureaucracy describes the extent to which the structures and processes of a school support teachers’ work. Enabling bureaucracy was correlated with academic optimism in the schools in this study.

Research studies have linked academic optimism and its dimensions of collective efficacy, trust, and academic emphasis with scaled test scores and percentages of students proficient on state tests. This study measured achievement using value added gain scores, which report the extent to which students have achieved the annual test score gains they would be expected to make, based on the actual testing history of similar students. Correlation and regression analyses revealed no relationship between academic optimism and school value added gain scores. A relationship between academic optimism and percentage of students proficient on state mathematics and reading tests was found, even when controlling for socioeconomic status.
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CHAPTER 1

INTRODUCTION

In order to develop sensible and realistic school programs for increasing student achievement, we must discern factors that increase achievement that are within the control of schools. We can establish empirical links between school characteristics and increased student achievement by investigating what schools that increase student achievement do differently from other schools.

Educational researchers have identified a number of in-school and out-of-school factors that affect student achievement. Since Coleman’s landmark study (Coleman et al., 1966), researchers have documented the strong association between socioeconomic class and academic achievement. The Coleman report concluded that “only a small part of [student achievement] is the result of school factors, in contrast to family background differences between communities” (p. 297). Many other researchers have confirmed the strong link between socioeconomic factors and academic achievement (Jencks, Smith, Acland, & Bane, 1972). Although this insight contributed to efforts to remedy the social ills that impacted academic achievement, it may have also led to the conclusion that what schools did simply did not matter very much (Fallon, 2004).

More recent research, however, using better information and more sophisticated techniques for quantitative analysis than Coleman had available, has presented a more
nuanced picture. While socioeconomic factors continue to show a strong association with student achievement, other factors within the control of schools also appear to be more important than Coleman and his followers had realized. Numerous studies have shown that the beliefs of teachers about their ability successfully to teach the students in their school significantly impact student achievement, reducing the effects of socioeconomic status (Bandura, 1993; Goddard, Hoy, & Woolfolk Hoy, 2000; Goddard, LoGerfo, & Hoy, 2004; Hoy, Sweetland, & Smith, 2002; Newman, Rutter, & Smith, 1989). The extent to which the climate of a school emphasizes the importance of academics has also been shown to be associated with student achievement, even when controlling for socioeconomic status (Goddard, Sweetland, & Hoy, 2000; Hoy, Tarter, & Kottkamp, 1991; Hoy & Sabo, 1998), as has the trust that teachers have in students and parents (Bryk & Schneider, 2002; Goddard, Tschannen-Moran, & Hoy, 2001; Hoy & Tschannen-Moran, 1999; Hoy, 2002; Tschannen-Moran & Hoy, 2000). Hoy (Hoy, Tarter, & Hoy, 2005a, 2005b) has recently suggested that these three characteristics of schools, all highly associated with academic achievement and all related, are manifestations or dimensions of a single school trait, called academic optimism. Academic optimism is a general, school wide confidence that students in the school can be academically successful.

Although researchers have documented the association between the three dimensions of academic optimism and academic achievement, there has been less research on the factors that give rise to academic optimism. Surprisingly, there is little statistical evidence that school leadership affects academic optimism, or, indeed, that
school leadership makes any difference in academic achievement (Hallinger & Heck, 1996). We simply do not know very much about how academic optimism can be created in a school.

Even so, a recent body of research from Sanders and colleagues has shown that what schools do may matter far more than had previously been understood (McCaffrey, Lockwood, Koretz, & Hamilton, 2003; Sanders & Rivers, 1996; Sanders, Saxton, & Horn, 1997). Using a large longitudinal database of student achievement test scores, Sanders and his colleagues found that teachers’ effects on growth in student achievement test scores were real and persistent. Unlike previous studies, Sander’s work did not compare the scores of students in one setting to students in another. Taking advantage of a large database of several years’ worth of annual student achievement test data, Sanders analyzed the performance of individual students over time, to determine if they were achieving the growth that, on average, would be expected.

The statistical model used by Sanders, along with other models based on student growth, have come generally to be known as value added statistical models (McCaffrey et al., 2003). These models, if reliable, have clear advantages as measures of student academic achievement. Particularly, they illuminate learning rates that can be masked by focusing on average scores. Value added models identify districts, schools and classes where students have low starting achievement but are making rapid gains, or conversely, those whose students have high starting achievement but are making slight gains. Value added models also account for the time lag problem caused by using
average test scores, which represent the accumulated effects of years of schooling and thus reflect practices many years in the past rather than a single years’ growth. A value added measure can pinpoint growth in academic achievement with far more precision than other measures, and can provide a previously-unavailable method for seeing beyond the broad differences in achievement attributable to socioeconomic factors (Sanders et al., 1997). Although value added assessment can illuminate previously hidden patterns of academic achievement growth, it cannot explain what factors in schools give rise to achievement growth.

Problem Statement and Purpose of the Study

This study tests a model of value added student achievement growth. The model explores the relationships among several school characteristics that previous studies suggest may be related to student achievement, and examines the effects of those characteristics on student achievement growth. The model is based on the premise that the way a school is managed has an effect on teachers’ general attitudes toward students’ prospects for academic success, which in turn has an effect on student achievement growth. The model is unique in that it analyzes the association of school characteristics with school level growth in achievement, measured by value added scores, rather than exploring associations with traditional school level measures of achievement, such as mean test scores or percentages of students deemed proficient on state tests.

Previous quantitative research suggests that each of the variables in this study may be directly or indirectly associated with higher levels of student achievement.
Enabling bureaucracy describes the extent to which the structures and processes of a school enable teachers’ work. Academic optimism represents the general confidence of the faculty that the conditions exist for students to be academically successful. Academic optimism is measured through its three underlying dimensions of collective efficacy, academic emphasis, and trust. Collective efficacy describes teachers’ collective attitudes towards the ability of the faculty to be successful in the teaching task. Academic emphasis is the importance placed on academics at the school. Trust describes the extent to which teachers trust students and parents to be helpful partners in the learning process.

Enabling bureaucracy relates to the management hierarchy, rules, processes and procedures of the school (Hoy & Sweetland, 2000). The construct has its roots in business organizational research. In the 1990’s, Adler and Borys proposed a new paradigm for looking at organizational structures and processes in the business world, by challenging the conventional wisdom that all bureaucracy was, by its very nature, undesirable. They pointed out that many of the features of bureaucracy, such as clear authority structures and helpful policies and procedures, served useful functions. Rather than label all bureaucracy as bad, they distinguished between bureaucratic structures that enabled organizations to function effectively and those that hindered capable functioning (Adler, 1999; Adler, 1996; Adler & Borys, 1996).

Hoy and Sweetland (2000) applied the construct of enabling bureaucracy specifically to schools. Citing Adler and Borys (1996) and other research that characterized both negative and positive aspects of bureaucracy, the authors set out to
describe and measure the positive and negative aspects of school bureaucracies. They found that enabling bureaucracy in schools manifested itself in shared authority within established roles, two way communications, seeing problems as opportunities, respecting differences, engendering trust, learning from mistakes, and welcoming the unexpected (Hoy & Sweetland, 2000). Enabling bureaucracy has been shown to be associated with trust in the principal, absence of role conflict, and truth telling (Hoy & Sweetland, 2001), and with teachers’ sense of power, authentic interpersonal relationships among teachers, and open communication between teachers and principal (Sweetland, 2001). This study tests whether an enabling school bureaucracy is also associated with academic optimism.

Academic optimism manifests itself through three separately-identifiable school traits. Collective efficacy stems from Bandura’s (1997) theory of human agency. Collective efficacy is the collective judgment among teachers that the faculty, as a whole, can cause student learning (Goddard et al., 2000; Tschannen-Moran, Hoy, & Hoy, 1998). Collective efficacy has been found to have a significant positive effect on academic achievement (Ashton & Webb, 1989; Bandura, 1993; Goddard et al., 2000; Hoy, Smith, & Sweetland, 2002; Hoy et al., 2002). Academic emphasis is an aspect of school climate that is a belief held by a school’s students and faculty that academics are important (Goddard et al., 2000). Academic emphasis has also been shown to be related to student achievement (Goddard et al., 2000; Hoy et al., 1991; Hoy & Sabo, 1998). Trust is a collective view held by the faculty that students can be relied on to work hard in school, and that parents will provide reliable support. Like the other
dimensions of academic optimism, trust has been found to be associated with academic achievement (Goddard et al., 2001; Hoy & Tschannen-Moran, 1999, 2003; Tschannen-Moran & Hoy, 2000; Tschannen-Moran, 2003).

These variables were selected because they represent school organizational, attitudinal, and contextual features that prior statistical research suggests may directly or indirectly facilitate achievement growth. Research links enabling bureaucracy with a number of positive school attributes that might be expected to contribute to academic optimism (Hoy & Sweetland, 2000; Hoy & Sweetland, 2001; Sinden, Hoy, & Sweetland, 2004). The link between the dimensions of academic optimism and traditional measures of student achievement is well established (Ashton & Webb, 1989; Bandura, 1993; Goddard et al., 2000; Goddard et al., 2000; Goddard et al., 2001; Goddard, 2002b; Goddard, Hoy, & Woolfolk Hoy, 2004; Hoy & Sabo, 1998). It is reasonable to suspect that academic optimism will prove to be a predictor of growth in student achievement.

The dependent variable in this study is student achievement growth, measured by value added scores. Value added scores provide a very different picture of student achievement than traditional achievement measures, such as scaled test scores or percentages of students found proficient on state proficiency tests. A value added score addresses the following question: to what extent did students achieve one years’ worth of academic growth in one year's worth of school? To arrive at the value added score, longitudinal test data are collected for each student, creating a profile that becomes that student’s “academic growth chart.” Each individual’s profile is then statistically
compared with the growth charts of all other students who have similar testing histories. This comparison enables a growth projection for each student. A student level value added score is derived from how much each student deviates from his or her projection. The scores will be positive if the student grew more than expected; negative if less than expected. Classroom, grade level, and school level scores can be derived from student level scores (Sanders et al., 1997).

The model tested in this study posits that an enabling bureaucracy is associated with academic optimism, and that academic optimism is associated with value added student achievement growth.
Significance of the Study

Educators and policy makers are searching for factors within the control of schools that can increase achievement among all students. This search is driven by legal mandates, by an increased emphasis on achievement for students at every achievement level, and by an increasing belief that schools can and do make a difference in student outcomes. The school improvement mandates of federal law impose consequences on schools that do not increase student achievement, both across the board and among subgroups of students (No Child Left Behind Act of 2001: Reauthorization of the Elementary and Secondary Education Act). Thus, educators and policy makers have every reason to seek practical steps that schools can undertake to increase student performance.

Measuring student achievement growth provides important information. It is important to know whether all schools, no matter where they fall in terms of absolute achievement scores, are making progress. Examining the characteristics of schools that can produce high growth may be more illuminating than studying those schools that have high average levels of achievement, but whose students may not be making much progress. Researchers must identify schools that can increase student achievement in all students in order to understand the actions that lead to improvement.

Establishing a clear understanding of those school characteristics that are associated with student achievement gains is a necessary precursor to developing logical school improvement strategies. We must understand what a school that produces student achievement gains looks like, and what its administrators, teachers,
and students actually do, before we can begin to devise action plans for increasing
achievement. Identifying measurable school characteristics that are associated with
student achievement growth and understanding the theoretical mechanisms by which
these characteristics operate to increase achievement is critical for the development of
sound school improvement plans.

Research Questions

The following research questions are presented by this study:

1. Is academic optimism a single characteristic of schools that is
   manifested through collective efficacy, academic emphasis and trust?

2. What is the relationship between enabling school bureaucracy and
   academic optimism?

3. Is academic optimism associated with value added student
   achievement growth?

Research Hypotheses

This study tests the following hypotheses:

1. Academic optimism is a single, latent trait of schools, which
   represents teachers’ confidence that the conditions exist for students
   to be academically successful.

2. Enabling bureaucracy has a positive, direct relationship with
   academic optimism.

3. Academic optimism has a positive, direct relationship with value
   added growth in student achievement.
Definitions of Terms

Key terms used in this study are defined below.

**Academic Emphasis**—“a general perspective of the importance of academics in a school” (Goddard et al., 2000)

**Collective Efficacy** — “a group’s shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment” (Bandura, 1997)

**Elementary Schools**—public schools providing instruction at the K-5 level

**Enabling Bureaucracy**—school organizational structures and processes that enable teachers in the performance of their work (Hoy, 2003)

**School Value Added Score**—a school level value added score, derived from Student Value Added Scores

**Student Achievement Growth**—growth in test scores measured by a value added model

**Student Value Added Score**—a student level score, based on the extent to which a student has achieved expected one year growth in an achievement test score in a particular subject

**Socioeconomic Status**—a background characteristic of students that measures poverty, based on the proportion of students in a school who are not eligible for free or reduced price school lunch

**Teacher Efficacy**—a “teacher’s belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context” (Tschannen-Moran et al., 1998)
Trust – “willingness to be vulnerable to another party based on the confidence that the latter party is benevolent, reliable, competent, honest, and open” (Hoy & Tschannen-Moran, 2003)

Value Added Analysis—a multivariate, mixed model analysis that predicts the growth in test scores attributable to one years’ worth of school (McCaffrey et al., 2003)

Assumptions

Data for this study were collected through surveys administered to elementary school teachers, under conditions designed to obtain their frank opinions with respect to the matters surveyed. The survey instruments used have been shown in previous studies to be valid and reliable measures of the constructs tested. This study assumes that teachers gave honest responses to survey questions.

Value added scores are based on scores on standardized tests, including the CTB McGraw Hill TerraNova test battery and the Ohio fourth grade proficiency tests. These tests are assumed to be reliable and valid measures of student achievement. The value added scores used in this study are also assumed to be reliable and valid measures of student achievement growth. Although value added scores are not free from controversy (McCaffrey et al., 2003), this study assumes that they are sufficiently reliable for research purposes, as discussed more fully in Chapter 2.

Information with respect to the proportion of students eligible for free or reduced price lunch, as well as other school demographic information, was obtained from the Ohio Department of Education. The study assumes that this information was accurately reported.
Limitations

This study uses a sample of 40 schools that represent a diverse group of suburban and rural schools in Ohio. The schools in the sample were drawn from a small group of school districts in Ohio that volunteered to participate in a pilot of value added analysis and that administer the same battery of annual achievement tests. The sample is not random and caution should be used in generalizing the results, especially to urban settings.

Summary

It is important to understand school characteristics that impact student achievement. Recently, a value added measure of student achievement growth has become available, so that researchers can examine not only the factors associated with traditional measures of achievement, but the factors that lead to annual achievement growth. This study tests a theoretical model in which enabling bureaucracy is associated with academic optimism, which in turn is associated with value added achievement growth. Academic optimism and its three dimensions of collective efficacy, academic emphasis, and trust have been shown in prior studies to be related to traditional measures of student achievement, and prior research suggests that enabling bureaucracy may be related to academic optimism. These characteristics are of special interest because they are, to varying extents, within the control of school administrators, and thus present practical opportunities for school improvement.
This chapter reviews the literature with respect to each of these variables involved in this study, and presents a theoretical justification for the hypotheses presented.

**Enabling Bureaucracy**

Schools are bureaucratic organizations. Structure, rules and procedures define school organizational life for teachers as well as for students. Schools adhere to rigid schedules, teach set curricula, have extensive rules governing student and teacher behavior, and use standard procedures for everything from school lunch counts to scheduling teacher absences. Schools are notable for their sheer volume of forms and paperwork. Although the formal hierarchy is relatively flat in most schools, consisting of a principal with direct authority over teachers and perhaps a few other administrators with authority over aspects of school life, this hierarchy is historically and culturally rigid.

Schools are bureaucracies by default. The salient question about schools is not whether they are bureaucracies, but whether differences in their structures and processes account for differences in their effectiveness. The construct of enabling bureaucracy
addresses this question. The construct was developed first in the literature on business organizations, and later adopted and refined by educational researchers.

In the 1990’s, management writers Adler and Borys (1996) proposed a new paradigm for looking at organizational structures and processes in the business world. They challenged the conventional wisdom that all bureaucracy was, by its very nature, undesirable, and pointed out that many of the features of bureaucracy, such as clear authority structures and helpful policies and procedures, served useful functions. Rather than label all bureaucracy as bad, they distinguished between bureaucratic structures that enabled organizations to function effectively and those that hindered capable functioning (Adler & Borys, 1996; Adler, 1999, 2003).

Adler and Borys (1996) examined the characteristics of formalization in an organization, defining formalization as an organization’s rules, procedures and instructions. Prior to this, organizational theorists had focused solely on the amount of formalization present in an organization (Mintzberg, 1979; Pugh & Hickson, 1976). Some studies had associated high levels of formalization with absences, stress, and a lack of innovation and satisfaction (Arches, 1991; Kakabadse, 1986; Rousseau, 1978). Conversely, other studies had found that well-designed procedures enhanced performance, reducing role conflict and ambiguity and coordinating complex efforts (Jackson & Schuler, 1985; Organ & Green, 1981; Podsakoff, Williams, & Todor, 1986). Workplace procedures were also associated with employee commitment and satisfaction (Michaels, Cron, Dubinsky, & Joachimsthaler, 1988; Snizek & Bullard, 1983; Stevens, Diedriks, & Philipsen, 1992; Stevenson & Stigler, 1992). Looking at
these studies, Adler and Borsys (1996) made the common-sense observation that workers liked “good” structure, rules and procedures, and disliked “bad” ones, and attempted to formulate a theory that would explain what distinguished “good” from “bad” formalization, and why.

Adler and Borsys (1996) thus moved away from a simple characterization of all bureaucratic features as bad, to distinguishing between bureaucratic features that worked and those that did not. They did not focus on the presence or amount of formalization; rather, they focused on distinguishing formalization that enabled workers to accomplish their tasks versus formalization designed to coerce compliance.

To develop the theory, they conceived of formalization as a type of organizational technology, and looked to technology development as a way to explore the nature of helpful versus unhelpful technologies. Examining the development of copiers at Xerox, they found that as copier technology became more robust, technology developers moved away from trying to formulate features that were “user-proof,” in favor of designs that were transparent to the user. Designers attempted to illuminate features to the user so that the user could customize and repair the copier without having to call in experts. The goal at Xerox became to design a “successful interaction” between man and machine, rather than to make the machine foolproof (Adler & Borsys, 1996).

Building on this analogy, the authors concluded that certain types of rules and procedures also enabled a “successful interaction” between formalization and worker. For example, procedures that preserved organizational experience, thus preventing...
making the same mistakes over and over again, or codified best practices, thus aiding
efficiency, were useful and enabling for workers and served to enhance worker
commitment. On the other hand, procedures that were designed or used to reduce
worker initiative or monitor worker performance (that is, to be “user proof”) often
proved coercive, fostering resentment and stifling initiative (Adler & Borys, 1996).

The enabling procedures identified by Adler and Borys (1996) had several
notable characteristics. First, they codified best practices or institutional memory
without unduly limiting initiative. The authors quoted one worker who recognized the
importance of standardized work processes, so long as the workers themselves
developed the processes: “Standardized work means that we all work out the
objectively best way to do the job, and everyone does it that way” (p. 12). Standardized
procedures provided helpful guides for complex situations, serving as roadmaps for
action. They provided information and illustrated possible routes, while retaining
worker flexibility to find the best route for the situation. Enabling procedures also
included ways for workers to modify them and to add functionality.

Another characteristic of enabling procedures was that they were transparent,
providing visibility into the processes they regulated. They encouraged understanding
of an entire process, beyond those pieces of immediate concern, putting worker actions
into context. They also gave users “feedback on their performance by providing metrics
that help[ed] users assess their performance against historical standards” (p. 10). The
authors concluded that both high and low degrees of formalization could be enabling,
depending on the characteristics and needs of the organization (Adler & Borys, 1996).
Adler and Borys (1996) found that enabling formalization was not limited to the factory floor. They found examples of enabling bureaucracy in professional, knowledge-based organizations as well as in the manufacturing context, identifying professional organizations such as software development firms that successfully used varied bureaucratic structures for routine and non-routine tasks. The authors rejected the “organizational design dilemma” posed by observers who believed that the need for managing routine tasks through formal structures was incompatible with managing non-routine tasks using informal methods that enhanced creativity and risk-taking.

Adler and Borys (1996) explained this apparent incongruence by disputing both the psychological and sociological bases for the belief that formalization was inimical to worker creativity. They cited Cusumano’s (1991) study of Toshiba’s Fuchio Works software factory and Jelinek and Schoonhoven’s (1993) studies of United States electronics firms to show that even very formal procedures and processes could enhance employee commitment and support creativity. Relying on Ryan and Connell’s (1989) work with respect to identification of worker goals with organizational goals, they suggested that high creativity could exist and thrive in the face of formal structures when workers adopted organizational goals as their own. This internalization of organizational goals escaped the dichotomy posed by contingency theorists between internal and external motivation, and the concomitant belief that creativity could be present only when internal motivation was created by high autonomy. In Adler and Borys’s (1996) view, motivation based on identification with organizational goals could be, in essence, seen as intrinsic, and thus could exist in concert with high formalization.
From a sociological perspective, Adler and Borys (1996) posited that when employees believed in organizational goals, they did not experience formalization as a coercive restriction of individual autonomy, but as a desirable means to an end. By identifying the congruence between workers goals and organizational goals as a critical requirement for the co-existence of creativity and formalization, Adler and Borys thus presaged to some extent the distinction between cultures of commitment and cultures of compliance developed a few years later by Walton, described later in this paper.

In subsequent papers, Adler (1999, 2003) expanded the distinction between enabling versus coercive bureaucracy in knowledge-based organizations. Adler (2003) probed the notion that in software development, an area in which many workers might see formalization as antithetical to creativity, successful firms could use standardization and process control to enhance productivity without stifling creativity or creating employee dissatisfaction. He found that clear metrics, unambiguous structures, and formalization of processes reduced stress and increased commitment in creative environments, so long as the environment was characterized by high trust.

In summary, Adler (2003) framed four features of successful formalization in a creative environment:

- High worker participation in the development of rules and procedures;
- Extensive differentiation in the division of labor and intensive integration efforts;
- Tools designed to guide work rather than hindering creativity; and
- Strong corporate and professional communities. (p. 10)
Adler’s work provided a new way of looking at organizational structures and processes that transcended the prior, simplistic notion that all bureaucracy was bad, and began to explore the characteristics of organizational structures and processes that enabled workers to perform their jobs better.

More recent organizational theorists have expanded the “enabling” versus “coercive” bureaucracy distinction in examining the types of formalization at work in organizations that require high reliability. Bigley and Roberts (2001) looked at the bureaucratic features of the Incident Command System (ICS), a management system that firefighters, police and other emergency responders used to structure temporary organizations in emergencies. The ICS was highly bureaucratic, yet at the same time flexible enough to accommodate situations in which large numbers of diverse responders dealt with emergencies ranging from fires to terrorist attacks. In this respect, it was an example of a highly bureaucratic system that provided structure to an environment requiring flexibility, creativity and risk-taking.

ICS ran contrary to the notion that all bureaucratic structures limited the flexibility to cope with unstable emergency environments. ICS organizations were both bureaucratic and reliable under stress. Bigley and Roberts (2001) described ICS as highly bureaucratic, formalized, standardized, hierarchical, and reliant on specialized jobs. However, ICS had several features that allowed it also to be quite flexible. According to the authors, the system “continually mapped” to changing situations. They identified three ways in which this mapping occurred.
First, ICS used “structuring mechanisms” to define roles. These mechanisms set up a clearly understood structure, featuring well defined roles, yet provided flexibility with respect to when and how these roles were filled. An overall situation commander had the flexibility to have one person fill numerous roles, to not fill certain roles, or to fill them himself. He or she could also move people into different roles as the situation changed (Bigley & Roberts, 2001).

Next, ICS allowed for “constrained improvisation.” ICS organizations focused on avoiding the magnification of top-down error, by allowing discretion in how more senior actors managed. For example, when a senior commander had detailed knowledge of the situation and particular expertise, he or she gave quite detailed instructions. On the other hand, where the situation was fluid or poorly understood, or where subordinates had more relevant expertise, instructions from the commander might be quite general. Often, commanders gave extensive flexibility to subordinates to assess the situation and act accordingly. ICS organizations thus allowed authority to migrate to expertise (Bigley & Roberts, 2001).

ICS organizations improvised with tools and procedures when it appeared that established ways of doing things would not be successful. Improvisation was seen as legitimate when it fit the organizational goals and objectives and would not cause harm. On the other hand, “freelancing” was actively discouraged. According to the authors, ICS inculcated organizational norms that served to manage the paradox of preplanned and imposed routines versus spontaneous actions (Bigley & Roberts, 2001).
ICS also fostered “cognition management.” Drawing on the work of Weick and Sutcliffe (2001), Bigley and Roberts (2001) characterized ICS as maintaining a system-wide understanding that coordinated both top-down and bottom-up communications. That is, all actors in the system shared a set of “operational representations” that served to manage the response environment. The ICS system gave great attention to developing, communicating, and connecting the understandings of all the individuals in the system. For example, firefighters “sized up” the situation regularly, communicating their various perspectives and understandings throughout the organization, so as to construct the best possible understanding of reality. This constant evaluation was a key feature of the system.

Bigley and Roberts (2001) suggested that the ICS system held lessons for other organizations. Their work with ICS fits well within the theoretical framework of Adler, as ICS organizations seem to be living examples of highly bureaucratic, yet enabling, organizations. Bigley and Roberts’ rich descriptions of the characteristics of the ICS system may hold powerful lessons for the design of bureaucracies that work.

The work of Bigley and Roberts is in many ways similar to Weick and Sutcliffe’s (2001) research on high reliability organizations (“HROs”), although Weick and Sutcliffe did not explicitly link bureaucratic structures to enabling outcomes. Weick and Sutcliffe examined HROs such as nuclear reactor operators and aircraft carrier crews to determine the organizational characteristics associated with high reliability. The organizations looked at by Weick and Sutcliffe were highly bureaucratic in many respects, with formal hierarchies and strict procedures for certain
operations. Weick and Sutcliffe found that HROs managed the unexpected risks that characterized their work through five processes:

- preoccupation with failures rather than successes
- reluctance to simplify interpretations
- sensitivity to operations
- commitment to resilience, and
- deference to expertise (Executive Summary).

They called these five processes, taken as a whole, mindfulness, which they defined as maintaining “an underlying style of mental functioning . . . distinguished by continuous updating and deepening of increasingly plausible interpretations of what the context is, what problems define it, and what remedies it contains” (p. 3).

It would be reasonable to conclude that the mindful organizations of Weick and Sutcliffe (2001) had enabling bureaucracies, with structures and processes that enhanced their capability to process information. Both Bigley and Roberts (2001) and Weick and Sutcliffe (2001) examined organizations that, by their very nature, required highly levels of professional judgment, confirming Adler’s (Adler & Borys, 1996; Adler, 1999, 2003) conclusion that high levels of formalization could enable professional workers to do their jobs better. This work sheds additional light on the general characteristics of structures and processes that enable, rather than hinder, the work of an organization.

The concept of an organizational culture of “commitment” versus one of “compliance” is also related to enabling bureaucracies. Writing in the Harvard
Business Review, Walton (1985) distinguished those types of bureaucracies that work from those that do not in a way that complements Adler’s distinction between formalization for enablement and formalization for compliance. Walton contrasted bureaucracies based on a control strategy from those based on a commitment strategy. Although Walton did not explicitly discuss the degree of formalization in the organizations he analyzed, formalization was clearly present. Without focusing on bureaucracy, *per se*, Walton analyzed the extent to which management structures and processes enabled workers, through the generation of organizational commitment, or hindered them, through a focus on compliance. Although Adler and Borys (1996) noted the critical importance of congruence between worker and organizational goals (a key aspect of commitment) in enabling bureaucracies, Walton emphasized that developing structures and processes that could successfully create this congruence was an important aspect of productivity (Walton, 1985).

Walton (1985) contrasted a “control” workforce management strategy, characterized by inflexible hierarchies and rules and procedures designed to restrict worker autonomy and flexibility and punish workers for noncompliance, with a “commitment” strategy designed to share authority, encourage participation, and create jobs with flexibility and responsibility. “In this new commitment-based approach to the work force, jobs are designed to be broader than before, to combine planning and implementation, and to include efforts to upgrade operations, not just maintain them,” Walton noted (p. 79).
Walton (1985) looked particularly at the nature of supervision in a bureaucracy characterized by commitment. In an organization with high commitment, supervisory structures were designed to “impart rather than merely practice their technical and administrative expertise, and to help workers develop the ability to manage themselves” (p. 82). This required supervisors to have high levels of interpersonal skills, as well as a high level of conceptual ability.

Walton’s (1985) concept of commitment versus control is a little different than Adler’s concept of enabling versus coercive bureaucracy. Walton focused more on management practices and less on the nature of formalization within a company. However, the two sets of distinctions are conceptually closely related. Both describe differences between organizational practices that are useful, and those that are not; both focus on the positive aspects of structures and processes that synchronize worker and company goals and avoid a compliance effect; and both transcend the simplistic notion that all formalization is negative.

Hoy and Sweetland (2000, 2001; Hoy, 2003) applied the construct of enabling bureaucracy specifically to schools. Citing Adler and Borys (1996) and other research that characterized both negative and positive aspects of bureaucracy, the authors set out to describe and measure the positive and negative aspects of school bureaucracies. They focused on two aspects of bureaucracy: formalization and centralization. Formalization, upon which Adler and Borys (1996) had largely focused, was defined as the extent to which an organization relied on rules and procedures. Hoy and Sweetland
characterized formalization as coercive, with an aim of regulating employee conduct and punishing non-compliance, or enabling, with an aim of assisting employees in performing their jobs.

Hoy and Sweetland (2000) found that the characteristics of enabling formalization included two way communications, seeing problems as opportunities, respecting differences, engendering trust, learning from mistakes, and welcoming the unexpected. The characteristics of coercive formalization included top-down communication, seeing problems as constraints, suspicion of differences, distrust, punishing mistakes, and being afraid of the unexpected.

Centralization was the other aspect of bureaucracy explored by Hoy and Sweetland (2000). Centralization was defined as the degree to which employees participated in decision-making. The authors suggested that hierarchy could be helpful when superiors and subordinates shared authority within the confines of established roles.

The authors tested a conceptual model of bureaucracy created by cross-partitioning formalization and centralization aspects of bureaucracy in a 2 by 2 cross break, resulting in four possible types of bureaucracy. An enabling bureaucracy would have enabling formalization and enabling centralization, and a hindering bureaucracy would have hindering formalization as well as hindering centralization. Two other types of bureaucracy would also be possible: one with enabling formalization yet hindering centralization, and one with hindering formalization yet enabling centralization (Hoy & Sweetland, 2000).
To test this concept, the authors developed a set of measures based on descriptive statements about the nature of schools. They designed four sets of Likert items to measure the degree of enabling and hindering formalization and enabling and hindering centralization. They then performed an exploratory factor analysis to test for the two independent factors of centralization and formalization. They did not find two distinct factors. Rather, they found that school bureaucracies varied along a bi-polar continuum from enabling to hindering (Hoy & Sweetland, 2000). They settled on a 12-item questionnaire with descriptions of enabling and hindering centralization and formalization. Items included, for example:

- Administrative rules in this school enable authentic communications between teachers and administrators
- In this school red tape is a problem
- The administrators in this school use their authority to enable teachers to do their job
- In this school the authority of the principal is used to undermine teachers
  (Hoy & Sweetland, 2001, p. 307)

The authors then tested two initial hypotheses about enabling bureaucracy. First, that the more enabling the school bureaucracy, the less dependent teachers would be on superiors. Second, that the more enabling the bureaucracy, the less dependent teachers would be on rules. As predicted, dependence on rules and hierarchy was negatively correlated to enabling bureaucracy. The authors then used new data from 116 schools to test two additional hypotheses. They predicted that enabling
bureaucracy would be positively correlated with collegial trust among teachers and negatively correlated with teacher feelings of powerlessness. Both hypotheses were supported (Hoy & Sweetland, 2000).

The authors concluded that the nature of school bureaucracy was important. Rather than conceive of all bureaucratic structures in schools as harmful, they were able to identify measures of school bureaucracy that separated bureaucratic structures that enhanced teachers’ ability to perform their tasks from those than hindered them (Hoy & Sweetland, 2000).

In a later work, Hoy and Sweetland (2001) further developed the conceptual underpinnings of the construct and provided additional validation of the instrument, using a larger sample of teachers. Using data from teachers in 97 high schools, they again found the instrument to be stable, valid and reliable. They tested the following hypotheses: the more enabling the bureaucracy, the greater the extent of faculty trust; the more enabling the bureaucracy, the less truth spinning; and the more enabling the bureaucracy, the less role conflict. All were supported (Hoy & Sweetland, 2001).

Sinden, Hoy and Sweetland (2004) again extended the conceptual definition of enabling school bureaucracies, identified schools that evidenced enabling structures, and described the dynamics of structures that enable. The authors used two dimensions of school bureaucracy: formalization and centralization, with school structures varying along these dimensions. Formalization in schools was conceptualized as a continuum, ranging from coercive to enabling. Enabling formalization helped teachers and students solve the work problems of teaching and learning and gave them the flexibility to use
their judgment, while coercive formalization was used to control and punish teachers and students. Centralization was the extent to which employees participated in decision-making. Hindering centralization was characterized by the use of hierarchical structures to control and discipline teachers and students. Enabling centralization allowed teachers to work across boundaries and honored their professional expertise. The authors again noted that formalization and centralization covaried.

Through teacher interviews, the authors identified 146 behaviors and structural characteristics of enabling school structures. In schools with enabling structures, rules were seen as common sense, or as embodying a common set of expectations, rather than as inflexible and proscriptive. Sometimes teachers did not perceive that the school even had formal rules, even though there were procedures in place that formalized how work should normally be done. Enabling school structures had a very high degree of flexibility. Principals often ignored or bent the rules in order to accommodate the needs of teachers. Another characteristic of enabling school structures was that rules were often teacher initiated (Sinden, Hoy & Sweetland, 2004).

Enabling principals encouraged decision-making at the level of the greatest expertise. Principals deferred to the greater expertise of teachers when it came to curricular and other instructional decisions. Good communication was also a characteristic of enabling structure. Although the communication was often called “informal,” principals communicated regularly with school staff. Principals who fostered enabling structures were seen as treating teachers as professionals. They were
approachable, open, and good listeners. They also engendered the trust of their staffs, working hard not to be seen as undercutting teacher authority (Sinden, Hoy & Sweetland, 2004).

Although the construct of enabling bureaucracy has not been widely used by educational researchers, it is supported by the findings of a large body of research on school effectiveness and school reform. A large number of studies have examined what effective schools look like, and have described characteristics of schools that improve, without probing the underlying school structures and processes that lead to effectiveness or improvement.

For example, Edmonds (1979) found that effective schools were characterized by strong leadership, high expectations, an orderly atmosphere, emphasis on learning the basics, maintaining priorities, and monitoring student and teacher progress. Later studies confirmed and expanded these attributes of effective schools. Analyzing a group of effective schools studies, Austin and Reynolds (1990) found that effective schools had effective leadership, used site-based management, had a stable staff and strong staff development, maximized time for learning, recognized academic success, used collaborative planning, had community and parent support, had clear, commonly shared goals and expectations, and were characterized by order and discipline.

Another vein of research on school improvement focused on how schools enhanced effectiveness, rather than simply on describing the characteristics of effective schools. Little (1992) compared “relatively successful” and “relatively unsuccessful” schools, based on achievement test scores over a three year period. She found that
successful schools shared norms of collegiality and continuous improvement, and identified four types of interactions that she deemed crucial to successful improvement efforts: teachers talked frequently about their teaching practices, teachers were observed frequently and provided with useful feedback, teachers worked together to design instructional materials, and teachers learned from each other. In a similar vein, Rosenholtz (1989) found that in “learning-enriched” schools, teachers had shared goals, collaborated, believed in continuous professional growth, had confidence in their practices, and exhibited commitment and optimism. Pajak and Glickman (1989) found that school districts that were improving shared three characteristics: a continuous instructional dialogue, a support infrastructure, and varied sources of leadership.

Later researchers focused on developing guidelines and recommendations for improving schools. Teddlie and Stringfield (1993) recommended that schools seeking to improve understand their school context, develop and implement a full context-based plan for improvement, assess improvement with a variety of indicators, and have a teacher induction process. Similar findings emerged from other researchers (Hopkins, Ainscow, & West, 1994; Joyce, Calhoun, & Hopkins, 1999; Wasley, Hampel, & Clark, 1997).

Taken as a whole, the body of research on school effectiveness and school improvement presents a few surprisingly clear and consistent conclusions. Effective schools have strong leaders, who put in place structures and processes that facilitate teacher cooperation in developing effective instructional techniques, who foster teacher capabilities and confidence, and who clarify the goals and academic mission of the
Using the construct of enabling bureaucracy, we can begin describing in greater
detail the kinds of structures and processes that can lead to these outcomes.

One of the advantages of the enabling bureaucracy construct is that it helps
move away from the simplistic, unhelpful notion that bureaucracy in and of itself is
undesirable, to more subtle inquiries into what works in context. In some organizations
and contexts, or even for some operations within an organization, a hierarchical
bureaucratic structure or rigid processes may be enabling, while in others, a flowing
structure and loose processes may work best. In a given school, for example, it may be
helpful for everyone to understand clearly that only the principal can make decisions
about certain matters, while other decisions can be safely left to others, without fear of
repercussions. Similarly, processes involving student safety may have to be very rigid,
while processes involving the allocation of teacher responsibilities may be quite loose.

The concept of a dichotomy between loosely- and tightly- coupled organizations
is well established (Aldrich, 1979; Weick, 1976). Weick (1976) identified schools as
generally loosely coupled, observing that school organizational elements are typically
loosely joined and that the typical structures and processes of a school provide little
control over how the work is done. Organizational scholars have tended to see a
dichotomy in which organizations are either tightly- or loosely- coupled. However, it is
possible to see tight and loose couplings within a single organization. DuFour (2003)
touched on this in an article in which he put into an educational context the “loose-
tight” dichotomy as discussed by Collins and Porras (2002) in their book *Built to Last:
Successful Habits of Visionary Companies*. Collins and Porras argued that successful
organizations embrace paradox, managing to be both loose and tight at the same time.

According to DuFour, successful school districts embrace paradox, too, when they focus on:

- identifying and articulating both the fundamental purpose of the organization and a few big ideas that will help the district improve in its capacity to achieve that purpose. They are tight on purpose and big ideas—insisting that those within the organization act in ways consistent with those concepts and demanding that the district align all of its practices and programs with them.
  
- At the same time, however, they encourage individual and organizational autonomy in the day-to-day operations of the various schools and departments. This autonomy is not characterized by random acts of innovation, but rather is guided by carefully defined parameters that give focus and direction to schools and those within them. (p. 13)

This loose-tight dichotomy as characterized by DuFour (2003) is reminiscent of the highly bureaucratic yet also flexible and creative structures described by Adler and Borys (1996) and illustrated by the work of Weick and Sutcliffe (2001) and Bigley and Roberts (2001) with high reliability organizations.

Enabling bureaucracy is conceptually useful because it moves research one step closer to what practitioners can implement. By focusing on the nature of school bureaucracy, the construct shifts the emphasis to “what types of structures and processes cause teachers to be effective in their work?” This question focuses the inquiry squarely on the effects of bureaucracy on teachers (workers), and, unlike much of the writing on school improvement, is context sensitive.

Nonetheless, simply describing an enabling school bureaucracy will not be sufficient to improve schools. The enabling/hindering distinction is a useful yardstick, in that every school structure and process could, theoretically, be put to the test: “Does this enable or hinder teachers’ work?” No doubt just asking this question of school...
structures and processes leads to positive results. The remaining important issue to be explored, however, is the question of how an enabling bureaucracy is created.

It seems unlikely that enabling structures and processes arise by luck or happenstance. In fact, the literature clearly focuses on the role of leaders in creating organizational structures and processes that work. Hoy (2003) talks about the need for a school administration that is “flexible, sympathetic, supportive, and perhaps collegial,” and says that “principals in an enabling school find ways to help teachers succeed rather than being obsessed with control and compliance” (p. 92). He goes on to give a number of specific examples of ways that principals establish structures and processes that enable teacher work.

When describing the characteristics of enabling and hindering school structures, Sinden, Hoy and Sweetland (2004) emphasized the role of the principal in creating those characteristics. Enabling rules and procedures were seen as being largely in the control of the principal, whether he or she implemented and modified them unilaterally or decided to consult teachers about them. Informality, a hallmark of enabling bureaucracy, was also described as a tone set by the principal. Even the enabling characteristic of “deference to expertise” was seen as established by the principal, who made the choice allow certain decisions to flow to the area of expertise, or to call on teachers for advice. Indeed, Sinden, Hoy and Sweetland included principal behaviors as a separate characteristic defining enabling school bureaucracies. This characteristic largely focused on the role of the principal in creating a school climate in which teachers were treated as, and therefore saw themselves as, professionals. The result of a
climate of professional respect was higher teacher efficacy and teacher trust that they would be supported, resulting in an atmosphere of authenticity. In essence, teacher behaviors were seen as caused by, and as mirroring, principal behaviors. Principal flexibility was also a behavior associated with enabling school bureaucracies.

Geist and Hoy (2004) stressed the role of the principal in a study that found enabling bureaucracy to be strongly related to faculty trust in the principal. They described the principal as the “embodiment of school structure,” and stated flatly that “the principal gets the credit for good structures and the blame for poor ones” (p. 7). They observed that:

Principals within enabling structures are inclined to use formalisation and centralisation to assume the more vigorous and open elements of collaboration, flexibility, helpfulness, attention to understanding, and the thoughtful solving of sudden difficulties. These school principals use their power and authority to buffer teachers and design structures and procedures that facilitate teaching and learning—behaviors that are likely to be well received by teachers (p. 7, citing Hoy & Sweetland, 2001).

Although Adler and Borys (1996) did not address the leader’s role directly, in the companies they studied the decisions to create enabling structures and processes came directly from the management, as their discussion of management constraints on the creation of enabling structures makes clear. In his work on control versus commitment, Walton (1985) cast management in the causal role, describing the control/commitment dichotomy as a direct result of management decisions. Weick and Sutcliffe (2001) also regarded management as a key, if not the key, causal factor in creating a high reliability organization. Writing about how to create a culture of mindfulness, they said:
[A] culture of mindfulness, animated by norms of appropriate behavior, is likely if top management conveys a clear preference for mindfulness in its beliefs, values, and actions; if those actions and words are communicated credibly and consistently and remain salient for everyone; if those communicated values are seen to be consistent rather than hypocritical and are felt strongly by the majority of people; and if bonuses, raises, promotions, and approval flow toward those who act mindfully and away from those who don’t. “ (p. 124-5) (emphasis in original)

School effectiveness and school improvement researchers often refer to the critical role of “strong” leadership. It is possible that an aspect of “strong” in the school context relates to the ability to create an enabling school bureaucracy. Indeed, it is quite unlikely, given what we know about schools, that “strong” means dictatorial or overbearing. A close reading of the research with respect to school leadership bears this out. In school research, “strong” leadership usually describes leaders who create clear, workable structures and processes by which teachers can be both secure and innovative in their work. The creation of an enabling bureaucracy is a key part of managing a school well.

Researchers have been largely unsuccessful in identifying leadership characteristics that can be statistically linked with student achievement (Hallinger & Heck, 1996). In searching for leadership attributes that make a difference in schools, it may be more fruitful to look at the structures and processes created by school leaders than to try to measure leaders’ personality traits, charisma, style, or other attributes. One thing we know about all leaders, and school leaders are no exception, is that effective leaders do not all look the same. Some are charismatic; others are dull. Some work from grand, inspirational visions; others succeed with a low key focus on daily
improvement. Rather than focus on specific leader traits or styles, it may be more illuminating to ask whether leaders have established and fostered school organizations that enable the key work of the school.

Principal leadership may be difficult to measure directly because it has delayed effects that are not consistent across school types. A school with a long-tenured principal, who has created an enabling bureaucracy in which teachers are highly enabled and committed, may lose that principal, and yet the structures and processes will persist. Such a school may be, for a while at least, “principal-proof.” A weak principal who follows a strong one may do nothing but stay out of teachers’ way, yet preside over a school with high residual effectiveness until something upsets the status quo. Conversely, it may take a long time to see the effects of a principal whose leadership will ultimately build enabling structures and processes. In many districts, principal mobility is so high that these time delays could have a real effect on the outcomes of studies that do not have a strong longitudinal design.

This study avoids these issues by focusing on the organizational outcomes that are within the control of leaders, rather than on the leaders themselves. While a measure of enabling bureaucracy would not be appropriate as a basis for forming judgments about individual leader’s effectiveness, given the issues described above, it may prove to be a good basis for understanding how effective leadership shows up in schools.
Academic Optimism

Academic optimism is a construct that arose out of quantitative studies that identified three related school characteristics that had strong associations with academic achievement. Collective teacher efficacy, academic emphasis, and trust have each been linked to academic achievement, and in each instance the association was so strong that it overcame the effects of socioeconomic status. Hoy and his colleagues (Hoy et al., 2005a, 2005b) begun to wonder if these three variables might be measuring a single, latent school trait.

The authors described a characteristic of schools that encompassed a set of teacher attitudes manifested by collective efficacy, academic emphasis, and trust. They called this new construct “academic optimism,” and posited that it was a “single powerful force explaining school performance” (Hoy et al., 2005b, p. 4). Several studies confirmed the hypothesis that academic optimism was a single, latent construct, which included the three dimensions of collective efficacy, academic emphasis, and trust. Each of these dimensions is discussed in the following sections.

Collective Efficacy

Collective efficacy is a group manifestation of the concept of teacher self efficacy. The conceptual roots of self efficacy lie in the reinforcement theories of Rotter (1966) and the human agency theories of Bandura (1997). Rotter’s theory of reinforcement is based on the idea that an individual’s response to a stimulus is determined by his or her expectation that a predictable outcome will result from a particular behavior (Rotter, 1966). The value placed on the expected outcome
determines the reinforcement value of the outcome. Particular behavior is motivated by
the expectation about the likely outcome as well as the perceived desirability of the
outcome (Rotter & Mulry, 1965; Rotter, 1966). Rotter distinguished between beliefs
about the internal control of reinforcements, in which reinforcements are attributed to
personal actions or characteristics such as hard work or intelligence, and beliefs about
the external control of reinforcements, in which reinforcements are attributed to external
factors such as luck. Rotter’s theories form the basis of locus of control theory (Rotter

Bandura’s social cognitive theory contributed to the development of the teacher
efficacy construct through its focus on the concept of human agency. According to
Bandura, human choices are based on a combination of personal factors (cognitive,
emotional or biological states) environmental factors, and behavior. Human behavior
can be explained by the interaction of these forces, in a process Bandura called triadic
reciprocal causation. Bandura’s self efficacy theory is based on the assumption that
humans make purposeful choices, based on beliefs about the likely outcomes of the
interactions of their behaviors with the environment (Bandura, 1986, 1993, 1997).

Bandura defined self efficacy as the belief “in one’s capability to organize and execute
the courses of action required to produce given attainments” (Bandura, 1997). Unlike
self-esteem, which is a general trait, self-efficacy is specific to particular situations or
contexts (Bandura, 1997). One might have high self-efficacy for mountain climbing,
for example, but low self-efficacy for statistics.
Bandura attributed self-efficacy to four sources, in roughly declining order of importance: mastery experiences, vicarious experiences, social persuasion, and affective states. Mastery experiences are experiences in which effort produces positive results, so that a person becomes convinced that they “have what it takes to succeed” (Bandura, 1997). In vicarious experiences, individuals form conclusions about the likely outcomes of action through observing others’ actions and their outcomes. Vicarious experiences enhance self-efficacy when an individual observes a positive, predictable consequence from the actions of someone with whom he or she identifies. By identifying with another, an individual gains confidence in his or her own ability to execute a task. Social (or verbal) persuasion occurs when someone is encouraged to believe that he or she can undertake a course of action that will have predictable, positive results. Affective states, such as anxiety or depression, affect efficacy by shifting the focus inward, away from the task at hand. According to Bandura, self-efficacy can come from any of these four sources, but mastery experience is by far the most powerful source of efficacy beliefs. Bandura believed that individuals with high self-efficacy seek out challenges, set more challenging goals, exert high levels of effort, and do not give up easily (Bandura, 1997).

During the 1970’s, Rotter’s and Bandura’s theories of human behavior began to be applied specifically to teachers (Armor et al., 1976; Barfield & Burlingame, 1974). An early Rand Corporation study, based theoretically on Rotter’s work, defined teacher efficacy as “the extent to which the teacher believes he or she has the capacity to produce an effect on the learning of students” (Armor et al., 1976). The measure of
efficacy effects was based on two questions: “When it comes right down to it, a teacher really can’t do much—most of a student’s motivation and performance depends on his or her home environment,” and “[i]f I try really hard, I can get through to even the most difficult or unmotivated students” (Armor et al., 1976). This study and a later Rand Corporation study both found that teacher efficacy was a powerful predictor of academic achievement (Armor et al., 1976; Berman, McLaughlin, Bass, Pauly, & Zellman, 1997). The correlation between teacher efficacy and student achievement has since been confirmed by numerous other researchers (Anderson, Greene, & Loewen, 1988; Ashton & Webb, 1986, 1989; Berman et al., 1997; Gibson & Dembo, 1984; Moore & Esselman, 1992).

During the 1980s and 1990s, scholars explored the psychological underpinnings of teacher efficacy in greater depth, as they struggled to flesh out the construct and to reconcile the extent to which efficacy beliefs were rooted in Rotter’s locus of control theory or Bandura’s self-efficacy theory (Ashton & Webb, 1989; Gibson & Dembo, 1984; Guskey & Passaro, 1994; Riggs & Enochs, 1990; Soodak & Podell, 1996; Woolfolk & Hoy, 1990). In 1998, Tschannen-Moran and her co-authors (Tschannen-Moran et al., 1998) reviewed the literature and developed a strong theoretical model of efficacy that identified two distinct dimensions: analysis of the teaching task and assessment of personal teaching competence. The authors defined these dimensions as follows:

In analyzing the teaching task and its context, the relative importance of factors that make teaching difficult or act as constraints is weighed against an assessment of the resources available that facilitate learning. In assessing self-perceptions of teaching competence, the teacher judges personal capabilities
such as skills, knowledge, strategies, or personality traits balanced against personal weaknesses or liabilities in this particular teaching context. (Tschannen-Moran et al., 1998, p. 228) (emphasis in original)

The authors’ theoretical model is shown in Figure 2.1 below.

![Diagram of Teacher Efficacy Model](image)

**Figure 2.1: Model of Teacher Efficacy. Source: Tschannen-Moran et al., 1998, p. 228.**

This model is squarely based in Bandura’s four sources of efficacy beliefs, and reflects the way that teachers process their experiences in order to make context-specific judgments about their ability to execute the teaching task (Tschannen-Moran et al., 1998).

Even as researchers were expanding and refining the construct of individual self-efficacy, Bandura began expanding the concept to groups. Bandura theorized that, like individuals, groups develop beliefs about their abilities to produce particular
courses of action (Bandura, 1997). While early researchers had aggregated individual teacher self-efficacy scores to the school level (Esselman & Moore, 1992; Hoover-Dempsey, Bassler, & Brissie, 1998; Newman et al., 1989), Bandura posited that the construct had a separate organizational existence, different from a group average of individual efficacy. According to Bandura (1997), individual and collective efficacy “have similar sources, serve similar functions, and operate through similar processes” (p. 478; quoted in Goddard, Hoy & Woolfolk Hoy, 2004), but are distinct constructs. Collective efficacy is an organizational trait that represents collective judgments concerning the extent to which the group as a whole can cause a particular outcome (Bandura, 1997). Although conceptually distinct, individual and collective efficacy are highly correlated. Some authors have suggested that high collective efficacy may lead to higher individual teacher efficacy (Goddard & Goddard, 2001; Goddard et al., 2004).

Like individual efficacy, collective efficacy is strongly linked to academic achievement (Bandura, 1993; Goddard et al., 2000; Goddard, 2001; Goddard et al., 2004; Hoy et al., 2002). Bandura (1993) was the first to explore the link between collective teacher efficacy and academic achievement. Bandura asked teachers about their beliefs “in their school’s capability as a whole” (p. 141). He found that teachers’ beliefs in the collective ability of the staff to teach the school’s students were associated with the school’s aggregate academic performance, and that these effects were stronger than the effects of socioeconomic status or prior academic achievement (Bandura, 1993).
In 2000, Goddard, Hoy and Woolfolk-Hoy published a theoretical model of collective efficacy that was very similar to the Tschannen-Moran et. al (1998) model of individual teacher efficacy. They also developed an instrument to assess collective efficacy that was theoretically based in the two dimensions of efficacy---personal teaching efficacy and task analysis---developed by Tschannen-Moran et. al in 1998. This instrument measured a group orientation by asking questions about the teachers’ perceptions of the faculty as a whole. The instrument used a 6 point Likert scale, ranging from strongly agree to strongly disagree. Questions included positive and negative assessments of both dimensions of efficacy, for example:

- Teachers in this school have what it takes to get the children to learn (personal teaching efficacy, positive assessment)
- If a child doesn’t want to learn teachers here give up (personal teaching efficacy, negative assessment)
- The lack of instructional materials and supplies makes teaching very difficult (analysis of task, negative assessment)
- The quality of school facilities here really facilitates the teaching and learning process (analysis of task, positive assessment) (Goddard et al., 2000)

Using a hierarchical linear model and data from 47 elementary schools within a large urban school district, Goddard et. al (2000) found that collective efficacy predicted student achievement in both reading and mathematics, and outweighed the effects of socioeconomic status, African-American status, and gender. In a later study,
Goddard (Goddard & Goddard, 2001) examined the effects of prior achievement, which he saw as an indicator of teachers’ prior mastery experiences, and thus a likely contributor to efficacy. As he expected, prior reading achievement explained more of the between-school variance in collective efficacy than did socioeconomic status or race (Goddard, 2001).

Hoy, Sweetland and Smith (2002) also found an association between collective efficacy and student achievement. Using data from 97 high schools, the authors tested a structural equation model in which collective efficacy predicted student mathematics achievement. They found that the effects of collective efficacy outweighed those of student socioeconomic status in influencing achievement. These findings held true in a subsample of rural high schools examined by Smith, Hoy and Sweetland (2002).

Goddard, LoGerfo and Hoy (2004) also found that performance on high school achievement tests in five subjects was significantly correlated with collective efficacy, even after accounting for socioeconomic status, minority enrollment, and prior achievement.

Because of the strong link between the collective efficacy of teachers and student achievement, mechanisms for increasing teacher efficacy beliefs should figure prominently in the search for practical strategies to increase student performance. “How can perceived collective efficacy be increased?” is a question that should be heavily on the minds of school reformers, given the relative scarcity of variables unrelated to socioeconomic status that have been shown to predict student achievement.
Unfortunately, there have been no controlled experiments that identify effective efficacy treatments. A number of studies, however, have examined certain school attributes that are associated with efficacy beliefs. For example, the relationship between collaborative culture and perceived efficacy is well-established. In their recent study documenting the link between collective efficacy and high school achievement, Goddard et. al (2004) discussed the influence of all types of cooperative behavior on efficacy:

The results of extant research across a number of disciplines suggest that high levels of collective efficacy are found in groups that share organizational decision-making powers and in which colleagues exhibit other types of cooperative behavior aimed at improving one another’s professional practice. Indeed, one recent study (Goddard, 2002) indicates that the more teachers are given the power to influence school decisions concerning the instructional program, the greater their levels of perceived collective efficacy. (p. 18)

Goddard (2002b), referenced in the above quotation, had looked at how school organizational practices in 45 elementary schools influenced collective efficacy. His prediction that the extent of teacher influence over decisions would be associated with teachers’ collective efficacy was confirmed. Goddard suggested that increasing collective efficacy was a responsibility of school leaders, who “must work carefully to build collective efficacy of faculty.” Goddard warned, however, that school leaders could not build collective efficacy simply by turning over decision-making to faculty. Opportunities for decision-making should come within disciplined structures that delineated the roles of teachers (Goddard, 2002b).

Ross, Hogaboam-Gray and Gray (2003) also found that “teacher ownership of school processes” strongly predicted teacher efficacy. In a study of more than 140
Canadian elementary schools, they found that school leaders who empowered teachers, processes that promoted shared goals, collaborative decision making, and school plans grounded in the needs of the school were each strongly associated with collective efficacy, even after adjusting for socioeconomic status.

Other studies also support the proposition that teachers’ involvement in school processes is linked to efficacy. Lee and colleagues (Lee, Dedrick, & Smith, 1991) examined survey data from the large High School and Beyond Study, and found a significant correlation between the average individual teacher efficacy in a school and control over classroom conditions, as manifested by textbook selection, ability to determine instructional content and teaching techniques, and control over discipline. Raudenbush, Rowen, and Cheong (1992) asked teachers to respond to the following question to measure self efficacy: “To what extent do you feel successful in providing the kind of education you would like to provide for this class?” Their study found that scores on this question were significantly related to teachers’ perceptions that they had greater control over classroom and school policies, including types of professional development programs offered, grouping of students, textbooks, curriculum, and instructional content and methods. Moore and Esselman (1992) found links between teachers’ efficacy beliefs and teacher influence on school decision making and perceptions of few barriers to teaching. Rosenholtz (1989) found that positive feedback, collaboration, a coordinated approach to student discipline, and parent support were correlated with teacher efficacy. Other studies have found links between perceived
efficacy and trust (Da Costa & Riordan, 1996) and perceived collective efficacy, academic emphasis and the principal’s perceived influence with superiors (Hoy & Woolfolk, 1993).

This strain of research tells us that there are certain organizational characteristics of schools that are associated with collective teacher efficacy. Many of these characteristics, such as cooperative behavior, shared decision making, teacher ownership of school practices, and teacher control over instructional decisions relate to teachers’ control over the conditions of their work. This appears to be an important aspect of collective efficacy.

These studies beg the question: how do the conditions that are associated with high teacher efficacy arise in schools? Logically, it would seem that the actions of the principal would have an important role in developing the features of school organization and operation that are associated with collective teacher efficacy. Many of the management decisions of the school principal, such as scheduling decisions, hiring decisions, setting up opportunities for reciprocal teaching, providing opportunities for work with master teachers or teacher coaches, creating effective teacher reward and acknowledgement systems, developing shared decision making structures, and fostering teacher experimentation would be likely to have an effect on teacher efficacy, given what we know about the mechanisms of efficacy and the variables associated with it.

Despite this, only a few researchers have looked directly at the relationship of a leadership behaviors and teacher efficacy. When viewed in light of the large body of research on other correlates of efficacy beliefs, evidence that links principal leadership
to teacher efficacy beliefs is scant. Leadership plays a relatively marginal role in the work of many efficacy researchers. This treatment of leadership contrasts sharply with the emphasis of educational leadership scholars, who identify principal leadership as a driving force behind teacher attitudes and beliefs (Bass & Avolio, 1994; Leithwood, Jantzi, & Steinbach, 1999), and of writers on school reform and effective schools, who see strong leadership as a significant factor in school improvement (Austin & Reynolds, 1990; Edmonds, 1979).

Canadian researcher John Ross has been the leading scholar concerned with the relationship of leadership to teacher collective efficacy. Ross and Gray (2004) tested several structural equation models to examine the link between leadership and collective teacher efficacy. One model hypothesized that transformational leadership would affect teacher commitment to organizational values through its effects on collective efficacy. An alternative model hypothesized that transformational leadership would also affect teacher commitment to organizational values directly.

The authors theorized that the actions of school principals would affect efficacy by affecting the four sources of efficacy beliefs identified by Bandura (1997): mastery experiences, vicarious experience, social persuasion, and affective states. Specific behaviors likely to affect the sources of efficacy beliefs were identified as:

- Interpreting success and affecting teacher attributions
- Providing mastery experiences through professional development
- Changing capacity beliefs through persuasion
- Providing vicarious experiences by encouraging observations of other teachers
• Encouraging collaboration, and
• Fostering teacher participation in decision-making.

The authors assessed transformational leadership using a 12-item Likert scale that purported to measure “teacher perceptions that their principal leads by developing the capacity of the organization and its members to adapt to the demands of a changing environment” (p. 11). The measurement instrument included the following:

• Leaders in this school are unwilling to change own practices in light of new understandings (reverse scored)
• Leaders in this school promote an atmosphere of caring and trust
• Leaders in this school do not stimulate me to think about what I am doing with my students (reverse scored)
• Leaders in this school encourage us to evaluate our practices and refine them as needed
• Leaders in this school do not have high expectations for us as professionals (reverse scored)
• Leaders in this school do not set a respectful tone for interaction with students (reverse scored)
• Leaders in this school model problem solving techniques I can readily adapt for my work
• Leaders in this school fail to symbolize success and accomplishment within our profession (reverse scored)
• Leaders in this school are not aware of my unique needs and expertise (reverse scored)

• Leaders in this school provide moral support by making me feel appreciated for my contribution

• Leaders in this school do not encourage me to pursue my own goals for professional learning (reverse scored)

• Leaders in this school encourage me to try new practices consistent with my own interests. (p. 29)

The authors found that transformational leadership measured by these items had a significant effect on teacher collective efficacy, with a standardized regression weight of .42. Based on this finding, the authors recommended that principals undertake the following specific tasks: influence teacher perceptions of achievement data; help teachers set appropriate goals; and provide teachers with high quality professional development. The authors also recommended that researchers explore further the link between specific principal behaviors and the agency beliefs of teachers.

The authors tested two models: one model in which transformational leadership was directly related to collective efficacy, which in turn had an effect on teacher commitment to organizational values, and one in which transformational leadership had a direct effect on commitment and also an indirect effect on commitment through collective efficacy. Both models had good fits, although the second fit was marginally superior. The authors concluded that collective efficacy was a partial mediator of the effects of transformational leadership on teacher commitment (Ross & Gray, 2004).
Ross has also written several theoretical articles suggesting how principals might increase teacher efficacy. In “The Antecedents and Consequences of Teacher Efficacy” (Ross, 1998), he drew on the theories of Bandura to suggest a number of school interventions that might increase teacher efficacy. Ross grouped interventions into those that enhanced skill development, those that changed teacher beliefs, and those that changed the conditions of teacher work. In his view:

The most successful interventions are likely to be multiple treatments that combine instructional skill development with explicit attention to teachers’ beliefs about their role in guiding student learning and the creation of strong professional cultures. The most powerful source of efficacy information is the teacher’s interpretation of the outcomes of classroom action. The surest path to increasing opportunities for mastery experiences is through professional development based on powerful new methods for creating deeper student understanding, such as reciprocal teaching. . . . The key is to build professional communities to support collaborative cultures that are focused on the achievement of complex learning outcomes by all students. (p. 65)

In another article, Ross (1995) identified strategies for increasing teacher efficacy that focused specifically on changing the conditions of teacher work. He suggested that principals should build collaborative cultures, emphasize accomplishment, promote academic emphasis, provide responsive supervision, increase teacher participation in school decision making, and minimize the destabilizing effects of change.

Although he does not make these distinctions, Ross seemed to view the principal as having both direct and indirect effects on efficacy beliefs. In his structural equation model, the principal’s transformational leadership directly affected teacher’s efficacy beliefs (Ross & Gray, 2004). Such a direct effect might result when, for example, a principal uses direct verbal persuasion in his or her interactions with teachers. In other writing, Ross cast the principal as a creator of school conditions that are associated with
high teacher efficacy beliefs (Ross, 1998). This might occur when a principal institutes or supports school processes that build a collaborative culture, which in turn fosters teachers’ collective beliefs in their capacity.

American researcher Kristine Hipp has also examined the link between leadership and teacher efficacy, with significant but weak statistical results. Hipp and Bredeson (1995) found modest relationships between a number of transformational leadership behaviors and two different dimensions of individual teacher efficacy they called general and personal teacher efficacy. General teacher efficacy was defined as “a general belief about the power of teaching to reach difficult children” (p. 142, quoting Hoy & Woolfolk, 1993, p. 357). Personal teacher efficacy was defined as “a teacher’s rating of his or her own ability to perform the necessary tasks to bring about positive student change” (p. 142, quoting Gibson & Dembo, 1984, p. 574). The researchers found significant but quite modest links between overall transformational leadership behavior and both general and personal efficacy (r = .201 and r = .142, respectively). Hipp and Bredeson measured transformational leadership behaviors using an instrument based on five factors of transformational leadership adapted from Leithwood, Jantzi and Fernandez (1993). The leadership behaviors most strongly associated with personal teacher efficacy were “models behavior” and “provides contingent rewards.” Those associated most strongly with general teacher efficacy were “models behavior”, “provides contingent rewards” and “inspires group purpose.” No significant correlation was shown between efficacy and “holds high expectations” or “provides support” (p. 145).
In a qualitative component of the same study, Hipp (1997) examined the effects that the principals of three middle schools had on teacher efficacy perceptions. Based on coded, in-depth interviews, Hipp identified ten leadership behaviors that she believed influenced teacher efficacy. These included “models behavior, inspires group purpose, recognizes teacher efforts and accomplishment, provides personal and professional support, manages student behavior, and promotes a sense of community” (p. 9).

Like Ross, Hipp (Hipp & Bredeson, 1995) identified a direct relationship between principal behavior and teacher efficacy beliefs. However, the correlations Hipp identified were much weaker than those found by Ross (Ross & Gray, 2004). It is worth noting that while Ross examined leadership behaviors that were theoretically linked to Bandura’s mechanisms for forming efficacy beliefs, Hipp’s measures of leadership were not theoretically anchored in Bandura’s theories, but came from a strain of research unrelated to Bandura. It is possible that Ross’s theoretical anchor contributed to the strength of his findings.

In their study that explored survey data from the High School and Beyond Study, Newman, Rutter and Smith (1989) identified “principal leadership” and “administrator responsiveness” as two of a large number of organizational factors that could affect teacher efficacy beliefs. Both factors were correlated with mean individual perceptions of efficacy (r = .478 and r = .484, respectively). Efficacy was not separately assessed in this study; items deemed to measure the efficacy construct were extracted from survey data. In a later study using the same data, Lee, Dedrick and
Smith (1991) also found that principal leadership was associated with efficacy. Principal leadership included elements such as “gets resources for this school,” “deals effectively with pressures from outside,” “sets priorities,” “knows what kind of school he wants” and “lets staff members know what is expected of them” (p. 203).

Several other researchers have touched on the relationship between principal leadership and perceived teacher efficacy. Johnson (1994) examined the relationship between leader power and teachers’ perceptions of their level of empowerment. Individual teacher efficacy beliefs were characterized in this study as one dimension of empowerment. Johnson measured leader power using the Rahim Leader Power Inventory, which explores perceived bases of power. A principal’s rating as leading from a base of “legitimate power” was found to predict teacher self-efficacy. Wilson (2000) also looked at teacher empowerment. One dimension of empowerment was “impact,” defined as “the degree to which one’s behavior is perceived as producing intended effects on one’s task environment” (p. 2). This seems quite similar to individual efficacy. The study found that “the more principals participate in empowering behaviors, the greater the impact teachers feel they are able to make by fulfilling work-related tasks” (p. 8).

Outside the educational context, Bohn (2002) investigated the impact of leadership behaviors on organizational efficacy in business organizations. Bohn defined organizational efficacy as:

a generative capacity within an organization to cope effectively with the demands, challenges, stressors, and opportunities it encounters within the business environment. [Organizational efficacy] exists as an aggregate
judgment of an organization’s individual members about their (1) sense of collective capacity, (2) sense of mission or purpose, and (3) sense of resilience. (p. 2)

In Bohn’s formulation, collective capacity seems to be quite close to collective efficacy. Bohn found an extremely strong (r = .717) correlation between leadership and collective capacity, and a similarly strong relationship between leadership and sense of mission (r = .695). He also found a relationship between leadership and resilience (r = .446).

Like Ross in the educational context, Bohn focused on measures of perceived organizational capability. However, Bohn used rather different measures of leadership for this study than those that were used in studies in the educational context. His instrument, developed based on interviews with middle-managers, was comprised of the following five items:

- Leaders in this organization know exactly what they want to accomplish
- Leaders in this organization maintain focus on their goals
- Leaders in this organization have a credible track record
- Leaders in this organization know how to communicate their ideas
- Leaders in this organization get things done. (p. 6)

The last item had an especially strong relationship to organizational efficacy. Unlike Ross, whose leadership measures focused largely on behaviors that build respect for the individual, collaborative culture and professional skill, Bohn measured confidence in leaders’ abilities to craft goals and to move the organization successfully toward their realization.
Although these researchers found a correlation between leadership and perceived efficacy or closely related concepts, others have not found significant leader effects on efficacy beliefs. In a study of the effect of resources and support on individual teacher efficacy beliefs, Tschannen-Moran and Hoy (2002) found that support from the administration was not significantly related to personal teacher efficacy. An Ohio State University doctoral student also failed to find a direct relationship between transformational leadership and collective teacher efficacy (Nicholson, 2003). One difficulty in his study was that participating teachers failed to report the presence of two of the four dimensions of leadership studied, including one that Nicholson considered primary. These findings are somewhat contradicted by those of another Ohio State University doctoral student, who found significant but notably weak correlations between principal leadership and teacher efficacy in schools participating in school improvement efforts (Staggs, 2002).

Given the assertions of educational leadership scholars that principal leadership strongly affects teacher beliefs (Bass & Avolio, 1994; Leithwood et al., 1999) it is surprising that so few major quantitative studies have examined the effect of leadership on teacher efficacy beliefs. Although Ross (Ross & Gray, 2004) found high correlations between leadership measures and collective efficacy, other researchers have not strongly confirmed these finding. Perhaps, like Nicholson, researchers have looked for, but not found, significant leadership effects on teacher efficacy beliefs. Such unfruitful inquiries may go unreported. Leadership may indeed have little effect on teacher efficacy beliefs. If, as Bandura and others believe, efficacy beliefs are quite
stable in experienced teachers (Bandura, 1997; Tschannen-Moran & Hoy, 2001), it could well be the case that an experienced faculty is relatively immune to the effects of leadership.

It is also possible that researchers have defined leadership behaviors too narrowly, and focused on transformational leadership traits to the exclusion of managerial decisions and activities that more directly shape school climate. For example, Hipp (1997) and Nicholson (2003) measured a relatively narrow version of transformational leadership, building measurement instruments from the work of transformational leadership scholars highly focused on the charismatic aspects of leadership and the personal vision of leaders. Principals who impact teacher beliefs most strongly, however, may shape the school organization by building and fostering structures and processes that positively affect teachers’ ability to improve their teaching practices in very practical ways.

Correlations with efficacy beliefs may thus be quite sensitive to the particular leadership behaviors that are measured. Lee, Dedrick and Smith (1991), for example, found correlations between teacher efficacy and factors such as “gets resources for this school,” “deals effectively with pressures from outside,” “sets priorities,” “knows what kind of school he wants” and “lets staff members know what is expected.” In his theoretical work, Ross (1995, 1998) stressed the role of the leader in creating organizational features, such as cooperative structures and shared decision making, that support teacher collaboration. Although Ross and Gray (2004) used a transformational leadership construct, their instrument focused on specific behaviors more than on vision.
and charisma. Grounded in Bandura’s sources of efficacy beliefs, their items measured leadership behaviors that are more likely to create a culture of professional engagement, trust and collaboration, all organizational traits that have been linked to teacher efficacy beliefs. In sum, it may be that when leadership is measured in terms of creating school conditions that affect teacher work life, correlations with efficacy surface.

Trust

The trust that teachers as a group hold in the school’s students and their parents has also been shown to predict student achievement, even accounting for socioeconomic class. A number of scholars have argued that trust is an important school characteristic that makes a difference in student learning (Bryk & Schneider, 2002; Goddard et al., 2001; Hoy & Tschannen-Moran, 1999).

Hoy and Tschannen-Moran (1999; Hoy, 2002; Hoy & Tschannen-Moran, 2003; Tschannen-Moran & Hoy, 2000) developed the construct of trust in schools in several studies that examined faculty trust in the principal, colleagues, and students. Drawing on an extensive review of multidisciplinary literature relating to trust, the authors found that trust had a number of facets: willingness to risk vulnerability, benevolence, reliability, competence, honesty, and openness. They defined these facets as follows:

**Willingness to risk vulnerability.** Vulnerability is a precondition for the development of trust, because we have no need to trust those to whom we are not vulnerable (Tschannen-Moran & Hoy, 2000). Vulnerability stems from interdependence. (Rousseau, Sitkin, Burt, & Camerer, 1998). When we must rely on someone for an important end, we then become vulnerable to them (Baier, 1986;
Tschannen-Moran & Hoy, 2000). Trust exists when we continue to move forward even in the face of that acknowledged vulnerability (Rousseau et al., 1998).

**Benevolence.** Benevolence is the “confidence that one’s well-being, or something one cares about, will be protected and not harmed” (Baier, 1986; Hoy & Tschannen-Moran, 1999; Mishra, 1996)). It has also been described as “confidence in the good will of those who are trusted or an attitude of mutual concern” (Goddard et al., 2001). Tschannen-Moran and Hoy saw benevolence as one of the most common facets of trust. In short, benevolence is the assumption of good will on the part of others, or, in Baier’s words, “the vulnerability to another’s possible but not expected ill will” (Baier, 1986).

**Reliability.** Reliability, or dependability, is the sense that one can count on others to meet their commitments (Butler & Cantrell, 1984). When we trust someone, we have confidence that he or she will do what they have promised or what we have expected of them (Mishra, 1996).

**Competence.** Competence is that aspect of trust that recognizes that good intentions are not enough. A person upon whom we depend may intend to meet our needs, but may not have the skill or experience to do so. For example, Tschannen-Moran and Hoy (2000) give the example of a young surgeon who is eager to help, but in whose skills and experience the patient simply does not have confidence. To trust someone, we must have a belief that they can perform their role in a way that will meet our expectations.
**Honesty.** Honesty and integrity are important aspects of trust. One of the hallmarks of trust is truth-telling. (Baier, 1986; Butler & Cantrell, 1984; Tschannen-Moran & Hoy, 2000). Integrity is also important. A person’s actions and words must correspond (Tschannen-Moran & Hoy, 2000).

**Openness.** Openness is a willingness to share information. People who are open exhibit vulnerability to others, which engenders reciprocal trust (Tschannen-Moran & Hoy, 2000).

Tschannen-Moran and Hoy pointed out that although all of these facets of trust operated together, the relative importance of any given facet would vary depending on the particular individual and the particular situation. They identified the basic disposition to trust, mood or emotion, and values as factors that influenced an individual’s propensity to trust. They opined that a number of organizational attributes, such as structures, policies, leadership, and culture, would influence trust in organizations (Hoy & Tschannen-Moran, 1999; Tschannen-Moran & Hoy, 2000).

Tschannen-Moran and Hoy (2000) reviewed the literature regarding the measurement of trust, including experimental measures of individuals’ trust, such as mixed-motive games. They focused, however, on measures of trust as an organizational attribute. Although a number of the studies that they reviewed measured trust in the organizational context, most had focused on only one or a few of the facets of trust (Athos & Gabarro, 1978; Cook & Wall, 1980; Cummings & Bromily, 1996). Tschannen-Moran and Hoy grouped measures of trust according to whether they
measured generalized trust, organizational trust, or trust in intimate relations, and further grouped them by facet of trust measured (Tschannen-Moran & Hoy, 2000).

The authors developed an instrument to measure trust in schools (Hoy & Tschannen-Moran, 1999). They focused on trust as a collective school trait that described the extent to which teachers as a whole exhibited the various facets of trust. The instrument was reviewed by a panel of experts and subjected to field testing. In a pilot study, a sample of 50 teachers from 50 schools tested the psychometric properties of the instrument. Teachers in the pilot study also responded to survey questions measuring self-estrangement, powerlessness, efficacy, and conflict within the school. Hoy and Tschannen-Moran hypothesized that trust would be positively related to efficacy, and negatively related to estrangement, powerlessness, and conflict.

When the authors submitted the results to a principal axis factor analysis, they found that the questions loaded strongly on three factors: trust in the principal, trust in colleagues, and trust in students and parents. Trust in students and trust in parents seemed to measure a single construct, which the authors called “trust in clients.” The results showed that the discriminant validity of the trust measures was strong, as the predicted correlations with powerlessness, self-estrangement, efficacy and conflict emerged. Based on the pilot study, the instrument was revised to include those questions that had the highest factor loadings on a single factor, or that were an excellent conceptual fit despite loading highly on more than one factor.

The revised trust scales were then used in a larger study. Two hypotheses were tested. The first was that faculty’s trust in clients, colleagues, and principal would be
related, and the second was that faculty trust would be positively related to collaboration with parents in school decision-making. The sample consisted of 45 elementary schools in a large Midwestern district. Both hypotheses were confirmed. The three dimensions of trust were moderately correlated. All three dimensions were related to parental collaboration in school decision making, but in a multiple regression that regressed collaboration on all three dimensions of trust, faculty trust in clients had by far the strongest relationship to collaboration (Hoy & Tschannen-Moran, 1999).

Using items from the same scale, Goddard, Tschannen-Moran and Hoy (2001) examined the relationship between teachers’ trust in parents and students and academic achievement in reading and math, in a sample of 47 urban elementary schools. The instrument consisted of 15 items covering all facets of trust. It included questions such as “students in this school cheat if they have the chance” (honesty), “students are caring toward one another” (benevolence), “parents in this school are reliable in their commitments” (reliability), and “teachers in this school trust the parents” (vulnerability). The authors used hierarchical linear modeling in order to illuminate the variation of teacher trust both within and among schools. Results again indicated that items relating to trust in parents and trust in students formed a single measure of trust. The authors found that in the sampled schools trust varied slightly more between schools than within. That is, about half of the variation in trust was associated with school characteristics.

The authors examined the relationship of trust with a number of school demographic characteristics. They found that about 33 percent of the between school
variance in trust was explained by the proportion of African American students. Socioeconomic status explained twice as much as race, however, accounting for 66 percent of the variance. The authors concluded that social class rather than race explained the majority of the variance. Adjusting for race, gender, socioeconomic status, and prior achievement, the authors found that student achievement was significantly and positively associated with trust. The model explained 81 percent of the between school variance in both mathematics and reading achievement. This finding held true even after adjusting for percentage of low income students in the school as a whole.

Hoy (2002) also studied trust in high schools, and found that teachers’ trust in students and parents was positively and significantly related to achievement. Hoy speculated that trust is an important aspect of learning because learning is essentially a cooperative behavior. Teaching and learning require one to see others as competent, to believe that others’ intentions are benevolent, and to view others as reliable and honest. Hoy posited that trust is an essential component to the learning process, and that trust among teachers, parents and students made progress towards common academic goals possible.

Bryk and Schneider (2002) have also studied the relationship between trust and academic achievement, in a series of large scale studies in Chicago public elementary schools. They coupled statistical analysis with interviews with teachers, principals and parents. Like Tschannen-Moran and Hoy (2000), they found that trust in parents and trust in students represented one common attitude. They suggested that in elementary
schools, trust between students and teachers operated largely through trust between teachers and parents. They concluded that although trust does not have a direct effect on achievement, it “fosters a set of organizational conditions, some structural and some socio-psychological, that make it more conducive for individuals to initiate and sustain the kinds of activities necessary to affect productivity improvements” (p. 116). Trust was found to encourage risk taking and reform, to facilitate cooperative problem solving, to reinforce positive norms, and to “sustain an ethical imperative” that put students’ interests first.

There has been relatively little investigation of factors within the control of schools that may give rise to faculty trust in students. Hoy and Tschannen-Moran (1999) found that in schools where there was a high level of faculty trust in parents and students, there tended to be a higher level of shared decision-making with both parents and faculty. Tschannen-Moran and Hoy (2000) discussed the relationship of trust in schools to communication, collaboration, school climate, organizational citizenship and the proliferation of rules. They speculated that trust would be high when there was open, honest communication. They also suggested that principals who demonstrate that they trust teachers by genuinely including teachers in decision-making would increase trust within the school, including teachers’ trust in parents. Rules were seen as inversely related to trust. The authors saw a proliferation of rules as inimical to trust. Excessive rules communicated that employees were not trusted, and undermined a culture of trust:

The work of schools is complex and changes with the needs of each student. Discretion is required and resentment and distrust are likely to result when
teachers perceive a proliferation of rules interfering with their ability to do their jobs well. The consequences of such a stance impacts organizational participants’ affiliation with the organization. Teachers as well as students may respond to a proliferation of rules with feelings of alienation, disloyalty, and lack of commitment, which ironically can make dishonesty and cheating more prevalent. (Tschannen-Moran & Hoy, 2000, p. 35)

Although little is really known about what gives rise to teachers’ trust in students and parents, it is reasonable to suppose that the principal could manage the school in ways that enhance trust. Theoretically, the way the principal designs the structures and processes of the school could affect all the facets of trust identified by Hoy and Tschannen-Moran (1999): vulnerability, confidence, benevolence, reliability, competence, honesty and openness.

For example, if Tschannen-Moran and Hoy (1999) are right that excessive and inflexible rules undermine trust, principals can keep rules to a minimum. Rules that are inevitable can be structured to provide needed flexibility. Schools have many processes available to strengthen bonds between teachers and parents, such as setting up regular communication programs, creating structured programs for parents to volunteer, and using classroom level processes such as teacher calls and visits home and classroom open houses. A principal could fashion school organizations, processes, procedures, and rules in ways designed to facilitate openness between teachers, on the one hand, and students and parents, on the other. In sum, it seems likely that the way the principal manages the school could have a significant effect on trust.

**Academic Emphasis**

Academic emphasis, sometimes called academic press, is the extent to which the environment of a school makes academic achievement a central purpose (Goddard et
al., 2000; Hoy & Sabo, 1998; Lee & Smith, 1999; Murphy, Weil, Hallinger, & Mitman, 1982, December; Phillips, 1997; Shouse, 1996) Like collective efficacy, it is a group attribute. It reflects the extent to which a school as a whole values academic achievement. Like collective efficacy, it is also rooted in individual perceptions. Teachers’ individual beliefs about academics contribute to the organizational viewpoint. However, the group manifestation of beliefs about the academic focus of the school as a whole transcends individual teacher beliefs and takes on its own unique characteristics (Goddard et al., 2000). For this reason, academic emphasis is measured at the school level, providing information about the school environment as a whole rather than simply an aggregation of individual teacher beliefs.

Academic emphasis is an aspect of the school normative environment. A normative environment that emphasizes academics is self-reinforcing. When the actions of individual teachers and students are not in concert with the group norm, the group will act collectively to sanction those actions. Academic emphasis exerts a powerful pull on all students to achieve, and on all teachers to insist on achievement (Goddard et al., 2000).

Academic emphasis is also a reflection of a school’s seriousness about its core purpose. Although it should go without saying that all schools have an academic emphasis, this is not, in fact, the case. Some schools show, through their organizational attitudes and actions, that academic achievement is not highly valued, while others consistently reinforce the importance of academics. “The principles embodied in the idea of academic press help provide the sense of institutional purpose that distinguishes
schooling from other socializing institutions (e.g., the family, the church, the Boy Scouts, etc.) and raises it to a level of community importance” (Shouse, 1995). Not surprisingly, academic emphasis has repeatedly been found to be powerfully related to academic achievement (Bryk & Weisberg, 1976; Goddard et al., 2000; Hoy & Tarter, 1997; Huang, Waxman, & Wang, 1995; Lee & Bryk, 1989; Lee, Smith, & Cromanger, 1995; Lee & Smith, 1999; Phillips, 1997; Shouse, 1995).

Researchers have approached academic emphasis from several different theoretical backgrounds. Some have approached academic emphasis as an aspect of overall school climate and health, while others have couched it as a determining factor that distinguishes effective from ineffective schools. Most of the scholarly work on academic emphasis was done in the 1980’s and 1990’s. With the notable exception of Hoy and his co-authors (Goddard et al., 2000; Smith et al., 2002), in recent years the scholarly community in educational research seems to have shown little interest in the construct.

Hoy and colleagues (Hoy et al., 1991; Hoy & Tarter, 1997; Hoy & Sabo, 1998) first described academic emphasis as a component of a healthy school climate. In their pioneering work on school climate, these authors conceived of academic emphasis as an aspect of overall school health. The organizational climate of a school is “the set of internal characteristics that distinguishes one school from another” (Hoy & Tarter, 1997). School climate can be measured by the Organizational Health Inventory (OHI), an instrument that measures six dimensions of school climate, including academic
emphasis. Academic emphasis is one of a set of interrelated factors that, taken as a whole, determine the health of a school (Hoy et al., 1991; Hoy & Tarter, 1997; Hoy & Sabo, 1998).

Using data from the OHI administered to almost 3000 teachers in 87 middle schools, Hoy and Sabo (1998) found that, with the exception of Institutional Integrity (a measure of the school’s ability to maintain the integrity of its programs in the face of environmental pressures), all of the dimensions of healthy school climate were positively associated with academic achievement, even when controlling for the effects of socioeconomic status. Student achievement was measured by the results of state achievement tests in reading, mathematics and writing. Of all the dimensions of school climate, academic emphasis showed the strongest correlation with academic achievement ($r = .73$, .70, and .64, $p < .01$, with mathematics, reading and writing, respectively).

In 2000, Goddard, Sweetland and Hoy explored the relationship between academic emphasis and academic achievement in reading and math. They defined academic emphasis as “a general perspective of the importance of academics in a school held by administrators, teachers and students themselves” (p. 684). The authors drew on the prior work by Hoy and colleagues, as well as on school effectiveness and school reform research that suggested that successful schools focus on academics (Beck & Murphy, 1996; Edmonds, 1979; Smylie, Lazarus, & Brownlee-Conyers, 1996; Teddlie & Stringfield, 1993). They conceived of academic emphasis as a school climate attribute that captured the extent to which the school is “driven by a quest for academic
excellence” (p. 686). Schools engaged in such a quest have teachers who set high goals, believe that their students can achieve, and maintain an orderly environment. Such schools also have students, teachers and administrators who respect academic success.

The authors saw academic emphasis as descriptive of the normative environment of the school at both the classroom and the school level. For example, teachers’ beliefs that students could be successful and teachers’ maintenance of an orderly environment operated at the classroom level, while also contributing to overall school norms. These school norms became an organizational imperative, reinforced by the collective. In light of the organizational nature of the construct, the authors used a collective measure of academic emphasis to assess teachers’ perceptions of the school as a whole. They hypothesized that the greater the academic emphasis of a school, the greater the normative imperative for academic excellence.

The authors used a hierarchical linear model to test the relationship of academic emphasis to reading and mathematics achievement in elementary schools, taking into account students’ prior achievement and other school and student level context variables. Academic emphasis was measured by an eight-item instrument drawn from the OHI for Elementary Schools (Hoy et al., 1991; Hoy & Tarter, 1997), a climate instrument with questions appropriate for elementary grades. The instrument included questions such as: “students respect others who get good grades,” “the learning environment is orderly and serious,” and “teachers in this school believe that their students have the ability to achieve academically” (Goddard et al., 2000). The
instrument thus captured the normative environment of schools through assessment of student attitudes, teacher beliefs and practices, and the nature of the school environment.

The study found that academic emphasis significantly predicted school differences in achievement in both reading and mathematics, explaining, respectively, 50.4 percent and 47.4 percent of variability. An increase of one standard deviation in academic emphasis was associated with a gain of about 40 percent of a standard deviation in student achievement in mathematics and about 33 percent of a standard deviation in achievement in reading. These results suggest that increasing academic emphasis should be a major focus of school efforts to improve reading and mathematics achievement. It is worth noting that the sample for this study consisted of urban schools in which more than two-thirds of students qualified for free or reduced price lunch. The study thus found an explicit link between academic emphasis and academic achievement in a relatively high-poverty urban environment (Goddard et al., 2000).

With this work as a background, Hoy, Sweetland and Smith (2002) examined the links between collective efficacy and academic emphasis, on the one hand, and student mathematics achievement on the other. They proposed a model in which academic emphasis had a positive, direct effect on academic achievement, as well as a positive, direct effect on collective efficacy. Collective efficacy had a positive, direct effect on academic achievement. Using data from 97 high schools, they found that there was a significant relationship between academic emphasis and school mathematics achievement (r = .44, p < .01), even accounting for socioeconomic status. Assessing
their proposed model, they concluded that academic press works through collective efficacy rather than by directly affecting academic achievement. They also found that when collective efficacy is high, academic press is most potent.

Recently, Alig-Mielcarek and Hoy (2005) looked at how instructional leadership and academic press affected student achievement. Using structural equation modeling, and controlling for socioeconomic status, they found that academic emphasis had a direct effect on achievement, while instructional leadership did not. Instructional leadership worked through academic emphasis to influence achievement.

Using a different type of methodology, Huang et. al (1995) explored the role of academic emphasis by comparing five high-performing with six low-performing elementary schools in an urban district. The schools did not exhibit significant differences in teacher experience, certification or degrees earned, and the schools were statistically similar in ethnicity and socioeconomic status. The authors assessed academic emphasis as part of a teacher survey, developed for the study, that included fifteen scales that addressed a wide range of school characteristics. The authors found a significant difference between high and low performing schools in teachers’ overall perception of school climate. Teachers in high-performing schools rated significantly higher in scales relating to Academic Orientation, Curriculum Innovation and Facilities and Resources. Teachers in low-performing schools rated higher in scales measuring Affiliation, Non-Teaching Activities, and Discipline Problems.

Although they did not assess the effect of academic emphasis on academic achievement, Licata and Harper (2001) explored academic emphasis in examining the
association of school vision and school organizational health. They found that academic emphasis was significantly associated with the robustness of a school’s vision. They used the OHI (Hoy et al., 1991) to assess school climate, and measured school vision using a Robustness Semantic Differential instrument in which teachers chose the preferred of two paired words describing the school vision. Pearson correlations revealed a significant association between the OHI total score and the measure of school vision \( r = .49, p < .01 \). In a partial regression analysis that accounted for socioeconomic status, the authors found that of the subscales in the OHI, only Academic Emphasis and Institutional Integrity made separate and significant contributions to the robustness of the vision. The authors concluded that schools with healthy atmospheres may encourage the development of meaningful school visions that have drama and robustness, and thus are effective in motivating change. “In such schools,” they suggested, “we might speculate that a school vision is likely built on the drama of teachers and students striving to meet relatively high academic expectations” (p. 22).

All of the researchers discussed above looked at academic emphasis as an aspect of school climate. Another group of researchers has examined academic emphasis in the context of effective schools research. Murphy et. al (1982) called academic press one of the “generally accepted effective schools variables” (Benbow, 1980; Hallinger, 1981; Sweeney, 1982), and developed a theoretical model for academic emphasis based on their experience in the School Effectiveness Program in Santa Clara County, California. They defined academic press as the “degree to which environmental forces
press for student achievement on a school wide basis” (p. 22). In this definition, academic press broadly encompassed a group of environmental factors that included “school policies, practices, expectations, norms and rewards” (p. 22).

The authors’ posited that the beliefs of staff led to staff responsibility for learning, which in turn led to both school policies and classroom practices that affected student learning. The policies and practices of the school as a whole and the individual classroom practices of teachers each contributed to an environment that communicated to students the message that success was expected and attainable. School practices that contributed to academic emphasis included policies relating to school function and structure, such as those designed to keep academic goals paramount, protect instructional time, and promote an orderly school environment, as well as policies on student progress, such as homework policies, grading policies, and processes for monitoring student performance that established high expectations for student work.

Classroom level practices that contributed to academic emphasis included an academically demanding classroom climate, an orderly classroom, practices to ensure student academic successes, instructional practices that fostered achievement, and opportunities for student responsibility and leadership. These school and classroom factors affected students in three ways: by establishing academic norms among students; by enhancing students’ academic self concept, and by developing a sense of academic self efficacy in students (Murphy et al., 1982). The authors developed this theoretical model from the body of effective schools research and from experience in one program. It was not empirically tested.
Another body of work on academic emphasis has come from Bryk, Lee and Holland’s investigations of why Catholic high schools tend to outperform public schools with similar student populations (Bryk, Lee, & Holland, 1993; Lee & Bryk, 1989; Lee et al., 1995). In their 1993 book, *Catholic Schools and the Common Good*, Bryk, Lee and Holland looked at a number of social variables that influenced the equitable social distribution of academic achievement. They found persuasive links between equity in achievement and the academic climate of the school. Academic climate was measured by student reports of average hours spent on homework, the school’s emphasis on academic work, and the value the students placed on academic work. The authors concluded that the “organizational structure and normative environment within Catholic schools exert a pull toward academic pursuits for all students” (p. 269).

Lee and colleagues applied the ideas developed in the context of examining Catholic schools to analyses of high school reform models (Lee et al., 1995). They analyzed data from the National Educational Longitudinal Study (NELS) from 1988 and 1990 to understand the academic progress made by students in 820 secondary schools. Making a distinction that calls to mind the distinction between enabling and hindering bureaucracies, discussed above, they identified a number of “restructuring practices” that differentiated what they called “bureaucratically organized schools” from what they termed “communally organized schools.” A bureaucratically organized school was characterized by top-down governance, formal rules and procedures, academic specialization, and tracking. A communally organized school, on the other
hand, gave teachers greater authority over curriculum and instruction, fostered teacher cooperation, and supported interdisciplinary instruction.

The authors also found four specific organizational traits associated with communally organized schools that correlated with academic achievement and with equity in academic achievement. These traits were a common, academically focused curriculum, authentic instruction, teachers’ collective responsibility for learning, and academic press. Academic press was defined as a consistent school wide message that all students would meet high standards and would devote substantial effort to schoolwork. These traits were assessed by examining NELS survey data of principals and students. Schools found to have high levels of academic press exhibited significantly higher achievement gains in both mathematics and science (Lee et al., 1995).

Shouse (1995) was the first of several authors concerned with school reform models to see a conflict between academic emphasis and communal values within a school. He focused on the tension in school reform efforts between schools that held a “distinctly academic mission for all students” and those that aimed for “responsiveness to a diverse range of student’s social needs and interests” (p. 1). Shouse saw a conflict between these two reform models based in part on a four-year case study of two high schools. He characterized one school’s “main message” as: “of course it’s important for our students to do well academically, but our first concern is that they stay in school, stay out of gangs, and stay alive.” The other school’s “main message” was, in contrast: “sure we want our students to stay in school and stay out of trouble, but our first goal is
to raise their achievement” (p. 1). Although the first school had students with higher grades, the second school sent more students to college. Shouse speculated that the first school’s expressions of social support acted as an important constraint on academic achievement (Shouse, 1995).

Shouse saw academic emphasis as having three dimensions. The academic climate dimension manifested itself as a school policy of placing students in a narrow range of challenging academic subjects rather than a broad range of subjects taught at all ability levels. The disciplinary climate dimension manifested itself as a school wide emphasis on discipline and order. The dimension he called teachers’ instructional practices and emphasis captured teachers’ behaviors in setting challenging, objective standards, assigning meaningful homework, and promoting student understanding.

Shouse analyzed data from 398 schools in the NELS, using a hierarchical linear model to examine the relationships between academic emphasis, communal values, and academic achievement. He found that, across all schools, academic emphasis was correlated with high achievement. He also found that when academic emphasis was weak, a stronger school community actually constrained student achievement. He concluded that the most effective schools were those in which a strong emphasis on academic purpose was supported by a strong sense of community.

Phillips (1997) extended Shouse’s work in the middle school context, using data from three cohorts of students in 23 middle schools. Phillips, like Shouse, saw a dichotomy between communal values and academic emphasis. Unlike Shouse, however, she equated schools with high academic emphasis with the “bureaucratic
model” schools described by Lee et. al (1995). Although Phillips recognized that the early Catholic schools research on which Lee’s conceptual model of communal schools was based had a very significant academic component (Bryk et al., 1993), she nonetheless set up a contrast between bureaucratic versus communitarian schools, in which school with high academic emphasis were labeled bureaucratic. Phillips measured schools’ academic climate by asking teachers one of two questions: “what percent of the students in this school do you expect to complete high school?” and “what percent of the students in this school do you expect to compete a 4-year college degree?” as well as by students’ ratings of average amount of homework and by the percentage of students enrolled in Algebra in eighth grade. She measured communitarian climate using a series of variables relating to shared values, democratic governance, positive teacher relationships, and teachers’ caring for students. Phillips analyzed the data using a hierarchical model, controlling for context variables including prior academic achievement, ethnicity, gender and socioeconomic class.

Phillips’ findings were even more striking than those of Shouse. All the variables that constituted academic emphasis were positively related to achievement gains in mathematics, and all communitarian variables were negatively related to achievement gains. Academic emphasis was most strongly related to growth in the scores of the lowest achieving students. Phillips concluded that:

The results. . . suggest that the communitarian model of schooling may not be as effective as advocates claim. I find little support for the hypothesis that communitarian climate enhances attendance or mathematics achievement. One aspect of communitarian schooling may even be detrimental to these outcomes. In schools where the average level of teachers’ caring for students is relatively high, students’ test scores are relatively low. Battistich. . . [(Battistich,
Solomon, Kim, Watson, & Schaps, 1995) reported similar results for academic achievement in elementary schools. . . .

These findings suggest that teachers in some schools may be more concerned with maintaining affective relations with students than with imparting skills. This interpretation accords with Stevenson and Stigler’s [(Stevenson & Stigler, 1992)] findings that 45% of the teachers they studied in Chicago chose “sensitivity to the needs and personality characteristics of individual children” as the most important attribute of a good teacher. Fewer than 10% chose the “ability to explain things clearly” (pp. 166-67).

Lee and Smith (1999) returned to this issue several years later, with an aim of reconciling what they saw as the competing ideologies of communal schools versus academic schools. They contrasted schools that adopted a social support approach, based on notions of the importance of social capital, with schools that had a normative emphasis on academics. Social support was assessed as a measure of the extent to which students supported each other and the extent to which teachers and parents supported students. Academic emphasis was measured by the extent to which teachers had high expectations for student achievement and students and teachers felt that school goals and actions focused on learning. The authors used data from 30,000 sixth and eighth graders in Chicago schools gathered by the Consortium for Chicago School Research.

Using a hierarchical linear model that controlled for a host of context variables at both the school and student level, the authors found a clear, strong association between academic press and academic achievement, across all types of schools:

In 1996 as well as 1997, test scores in both math and reading follow a consistent pattern. Students in low-press schools score about .20 standard deviations below those in medium press schools; those in high press schools score between .25 and .30 standard deviations above the students in medium press schools. There is a consistent pattern to these group means: Student achievement is positively related to school academic press. (Lee & Smith, 1999)
Overall, academic gains were very modestly associated with social support (.017 standard deviations for math, .021 standard deviations for reading). Most importantly, the effect of social support varied significantly as academic press varied. In schools with low social support, achievement declined, with extreme declines in schools with low press, and modest declines in schools with high press. Achievement gains were greatest in schools with high press and high social support. The authors concluded that:

[T]he relationship between social support and learning depends on the type of school a young adolescent attends. That is, social support is strongly associated with learning in some schools, while the two factors are unrelated in other schools. And, in some schools, students with more social support actually learn less. Therefore, we suggest that a focus on the average relationship between social support and learning in schools may be misleading. And a focus on only improving social support may be misguided. . . .

Our findings here are clear. In schools with a strong press towards academics, students who experience high levels of support learn quite a lot. In schools where the academic press is low, even students with high levels of social support do not learn. And for students who do not have much social support to draw on, attending a school with high levels of academic press does not help them learn. (Lee & Smith, 1999)

In a recent follow up to the academic versus communitarian debate, Gill et. al (Gill, Ashton, & Algina, 2004) tested a model of effective schools based on research on effective parenting. The effective parenting model uses a two dimensional theoretical structure across the dimensions of demanding and responsive. Effective parents are high in both dimensions, insistent on high standards for behavior but also warm, affectionate, and responsive to the needs of their children. These types of parents are deemed “authoritative” (Baumrind, 1971). Gill et. al (2004) set out to use the effective parenting model to resolve the conflict in school effectiveness research between academic emphasis and communal values. They saw academic press as analogous to
the demanding dimension of parenting, and social support or communal values as analogous to the responsive dimension. Using data from NELS, and controlling for socioeconomic status, academic background, gender, and minority status, the authors tested the hypotheses that school demandingness and responsiveness would both be positively related to achievement, and that in schools that students and principals rated as responsive, socioeconomic and racial inequities in achievement would be reduced. School responsiveness was measured by student and administrator survey questions; demandingness was measured by administrator’s ratings of the school’s academic emphasis.

The study found no support for the hypothesis that achievement was positively associated with either responsiveness or demandingness. It is possible that using administrator ratings of demandingness presented a faulty picture. The authors also offered the explanation that “relationships between academic press and achievement have not been strong in the recent studies using HLM analyses and controls for SES and achievement. Our study also used HLM and two control variables—SES and prior grades—that may have reduced the likelihood of our finding a significant effect” (Gill et al., 2004). This rationale is difficult to understand given the research designs and use of HLM in the prior studies by Goddard, Shouse, Phillips and Lee.

With the exception of this recent study by Gill and colleagues (2004), educational researchers have repeatedly found a strong positive correlation between school academic emphasis and student achievement. There has been little research on the antecedents of academic emphasis in a school. Indeed, researchers have assumed
that academic emphasis is intentionally created by the way the school is managed. Researchers have defined academic emphasis in terms of reward structures, curricular decisions, disciplinary climate and other aspects of a school over which a principal has significant control. Although there have been no studies that examine the association of specific principal behaviors with academic emphasis, it is likely that the principal plays a key role in setting the academic emphasis of a school. More than collective efficacy and trust, academic emphasis can be seen as a direct outcome of school organization, processes and rules.

*Academic Optimism as a Single Trait of Schools*

Hoy and his colleagues (2005a, 2005b) suggested that collective efficacy, trust, and academic emphasis are three separate dimensions of a single, latent trait of schools called academic optimism. These three dimensions represent beliefs of the faculty that the conditions for student achievement exist, and give rise to a general optimism that students will achieve academically. The dimensions of optimism are factors that shape the normative environment of the school. These strong school norms provide control over the actions of all teachers, because the group sanctions those teachers who do not conform to the prevailing norms (Coleman, 1990).

Hoy (2005a) saw collective efficacy, trust, and academic emphasis as working together to shape the normative environment of a school in such a way as to enforce a strong organizational focus on academic achievement. Thus, where academic optimism was high, school norms encouraged teachers to believe that students could learn, to have confidence that successful teaching strategies could be found, to persist in the face
of obstacles, to have a consistently trusting attitude toward students and parents, and to focus on high standards and rewarding academic achievement.

Hoy (2005a) characterized the three dimensions of academic optimism as representing the cognitive, affective, and behavioral aspects of a school. Collective efficacy was the cognitive element, representing the thoughts and beliefs of teachers; trust was the affective element, representing the feelings of teachers; and academic emphasis was the behavioral element, embodying the specific actions that arose from collective efficacy and trust. These three aspects were mutually dependent and reinforced each other.

A study of 3,400 teachers in 146 elementary schools provided support for Hoy’s (2005a) hypothesis that academic optimism was a single, measurable attitude of schools that was related to student achievement. A confirmatory factor analysis using structural equation modeling supported the single-factor theory. A subsequent study (Hoy et al., 2005b) involving 96 Midwestern high schools supported the findings of the elementary school study. Structural equation modeling again supported the hypothesis that academic emphasis was a single latent construct. The authors tested a model in which socioeconomic status and previous achievement made direct contributions to student achievement, and also made indirect contributions to achievement through academic optimism. The model fit was good. The authors concluded that organizational optimism was a strong force for student achievement. They contrasted optimism with the traditional view of school achievement as a function of student motivation and
talent, and stressed that optimism can be taught and reinforced in organizations. Principals can enhance optimism by building efficacy, trust, and academic emphasis.

Value Added Achievement Growth

In educational research, the term value added is used to describe statistical methods that purport to measure the growth in student achievement that is caused by a year of schooling, excluding factors that are outside of the control of the school (McCaffrey, Lockwood, Koretz, Louis, & Hamilton, 2004; Meyer, 1997; Sanders et al., 1997). Value added models are considered to hold great promise because they are based on the growth in student achievement scores rather than on absolute scores. Thus, districts, schools and teachers with students who show greater or lower than average achievement growth can be identified, irrespective of their students’ starting points. This is an especially illuminating measure for schools in which students’ absolute proficiency is generally low, but that produce high learning gains. It is also an important measure for schools in which students’ absolute proficiency is high, but that produce low learning gains (Teachers matter: Evidence from value-added assessments, 2004; Meyer, 1997).

The school value added scores in this study are estimated based on the model developed by Dr. William Sanders in his work at the University of Tennessee and, later, at SAS, a primary contractor to states and districts that have implemented value added measures of student achievement. The Sanders’ model records the test scores of individual students over multiple years, estimates each student’s annual gain, and compares that gain to the gain that the student would, on average, be expected to
achieve, based on the test scores of students with similar testing histories. The model includes equations that estimate the effects of districts, schools and teachers on the academic growth of students. It employs a methodology that “enables a repeated measures, multivariate response analysis allowing the inclusion of all the information available for each student regardless of the degree of missing information” (Sanders et al., 1997). Student achievement data can come from any valid and reliable test, so long as the test is well correlated to the school curriculum and has sufficient stretch to avoid a ceiling effect (Sanders et al., 1997).

In the Sanders’ value added model, longitudinal analysis provides the control for differences among students, with each student serving as his or her own control. As discussed further below, the model does not otherwise account for factors, such as socioeconomic status and English proficiency, that are known to impact school achievement (Sanders et al., 1997). Other types of value added models rely on different methodologies that explicitly attempt to account for such confounding factors (Darlington, 1997; Mendro, Jordan, Gomez, Anderson, & Bembry, 1998).

Like any measure of student achievement, value added scores can be used for many purposes, including measurement of performance for school accountability purposes, teacher evaluation and pay systems, determination of the effectiveness of curricula, program evaluation, differentiation in instruction based on the differing gain patterns of high and low achieving students, and educational research (Ceperley & Reel, 1997; Darlington, 1997; McCaffrey et al., 2003; Sanders et al., 1997).
Educational researchers using value added data have identified a number of phenomena with respect to patterns of achievement growth. For example, researchers have found that classroom teachers have real and persistent effects on achievement gains, which outweigh the effects of variables such as economic class and race (Rivers & Sanders, 2002; Sanders & Rivers, 1996; Sanders & Horn, 1998). Researchers have identified deleterious effects when students change buildings as part of elementary to middle school transitions (Sanders et al., 1997). They have also shown that students at the highest achievement levels often show less growth than other students (Sanders & Horn, 1998; Sanders, 2000). However, published research involving value added scores has not yet progressed to identifying specific school or classroom practices or characteristics that are associated with high value added scores. This is likely due to the fact that, other than in Tennessee, there have until very recently been few places with sufficient years of data to use in research studies. It may also be due in part to the statistical complexity of value added models, to their large computing requirements, and to concerns in the academic community about the validity of value added scores, as discussed below.

The Sanders’ value added model is based on a series of mixed-model equations. “Solutions of these equations furnish unbiased estimates of the influences of districts, schools, and teachers on the rate of academic progress of populations of students” (Sanders et al., 1997). The general form of the mixed-model is:

\[ y = XB + ZU + e \]
where $y$ is the $m \times 1$ vector representing students’ scores for all subjects in all grades, $X$ is the $m \times p$ matrix of fixed effects, $B$ is the unknown $p \times 1$ fixed vector estimated from the data, $Z$ is the $m \times q$ matrix of random effects, $U$ is an unobservable $q \times 1$ random vector of the realized values of estimate random effects, and $e$ is an unobservable $m \times 1$ random vector variable representing random variation (Harville, 1976; Henderson, 1975; McLean, Sanders, & Stroup, 1991; Sanders et al., 1997).

The Sanders’ model uses three different equations to estimate district, school and teacher effects, respectively. The school equation is:

$$y_{ioklmn} = \mu_{ioklm} + e_{ioklmn}$$

where $y_{ioklmn}$ represents the test score for the $m^{th}$ subject for the $n^{th}$ student in the $i^{th}$ district and the $o^{th}$ school, $k^{th}$ year $l^{th}$ grade. $\mu_{ioklm}$ is the fixed school mean score for all students in the $i^{th}$ district, $o^{th}$ school, $k^{th}$ year, $l^{th}$ grade and $m^{th}$ subject; and $e_{ioklmn}$ represents the random deviation of the test score for the $n^{th}$ student from the school mean. The Sanders model uses five years of student test data (Sanders et al., 1997). The calculation of a school value added gain score for purposes of this study is discussed more fully in Chapter 3.

The Sanders’ value added model was put into widespread use in Tennessee in 1992, after being tested in a number of districts, when a new state accountability law required that value added scores be included in school report cards (Ceperley & Reel, 1997; Sanders et al., 1997). Shortly after it was implemented, the model was reviewed by a group of statistical experts employed by the state auditor’s office. They found that the model was methodologically sound and consistent with other statistical models in
widespread use, although they offered several concrete suggestions to improve the precision of teacher level effect estimates (Bock, Wolfe, & Fisher, 1996).

More recently, value added models generally have been extensively reviewed in a Rand Corporation study, discussed more fully below, that evaluated their use for teacher evaluation purposes. The Rand study concluded that there were sufficient questions regarding the precision of teacher effects estimates to preclude the use of value added models in high-stakes teacher evaluation systems based on the rank ordering of teachers. The study found, however, that value added models were generally sound, and that “it is not clear that [value added model] estimates would be more harmful than the alternative methods currently being used for test-based accountability” (McCaffrey et al., 2003). Among their recommendations, the Rand study authors urged researchers to “[l]ink [value added model] teacher effect estimates with other measures of teacher effectiveness to determine the characteristics or practices of effective teachers as a means of validating estimate effects and possibly identifying what produces effective teaching” (p. xix). As set forth below, this study does as the Rand researchers recommend (albeit at the school level rather than the teacher level), by using the value added measure as a correlate of a construct that has been shown to be highly correlated to other measures of student achievement.

Value added assessment has been controversial. All value added models do not operate identically, and the technical debate about the merits of various models is lively (McCaffrey et al., 2003; McCaffrey et al., 2004; Raudenbush, 2004a; Rivkin, Hanushek, & Kain, 2000; Rowen, Correnti, & Miller, 2002). In addition, commentators
differ about the extent to which value added measures are reliable measures of learning gains in various contexts (McCaffrey et al., 2003; McCaffrey et al., 2004; McCaffrey, Lockwood, Koretz, Louis, & Hamilton, 2004; Popham, 1997; Raudenbush, 2004a, 2004b; Reckase, 2004). To understand the controversy, it is helpful to separate opinions that are unique to value added models from opinions about the context in which information produced by such models is used. For example, those who oppose making any judgments about school or teacher effectiveness based on standardized test scores, or who oppose using student test scores as a criteria for school accountability systems, naturally criticize value added models used for such purposes (Darling-Hammond, 1997; Popham, 1997; Reckase, 2004). These are not necessarily criticisms specific to value added assessment models, but are in fact part of broader concerns about the use of standardized test data. This debate is beyond the scope of this study, which assumes that standardized test scores are valid and illuminating measures of student learning.

Other commentators question the use of value added scores in high stakes decision-making contexts such as school accountability systems (Raudenbush, 2004b) or for teacher evaluation (McCaffrey et al., 2003). These criticisms are based on the belief that very high levels of certainty and precision are required for fair reward or punishment systems that are based on rank orderings of schools or teachers. These commentators believe that, while value added measures may be superior to other measures of student achievement, such as mean proficiency levels, there is sufficient concern about possible unknown biases in the models to preclude using value added
scores as a basis for high-stakes decisions (McCaffrey et al., 2003; McCaffrey et al.,
2004; Raudenbush, 2004a, 2004b). When considering the criticisms of value added
models it is important to bear in mind how the value added data is being used, as the
models are thought to be more appropriate in certain contexts, and for certain purposes,
than for other contexts and purposes.

The Rand Corporation study, which examined the reliability of value added
models solely in the context of teacher accountability programs, is the most
comprehensive review of value added models to date. As set forth above, the authors
concluded that value added models are methodologically sound. They also concluded
that the evidence strongly supports the proposition that teachers have real and
persistent effects on student learning growth. However, the authors raised significant
questions whether current value added models could estimate the magnitude of teacher
effects with sufficient precision to serve as the basis for teacher accountability or
compensation systems. The authors found that value added models were likely reliable
for identifying teachers who were significantly above or below average, but they felt
that it had not been proven that the models were sufficiently free from bias to support a
rank ordering of teachers (McCaffrey et al., 2003).

One of the authors’ most significant concerns was that value added teacher
effect models could not accurately separate teacher effects from the effects of schools,
districts, or prior teachers. Effects on learning gain caused by factors such as school
organization or climate, when not otherwise accounted for in a teacher effects model,
are subsumed into teacher effects. Thus, teachers could be rewarded or penalized based on school factors that are out of their control (McCaffrey et al., 2003).

This concern is not relevant to this study, which uses a school value added score as a measure of the entire value added effect of a school, including both teacher-level effects and school-level effects. For purposes of this study, it is not important to separate teacher effects from school effects. It is possible that some proportion of school value added effects are attributable to district policy that is uncaptured in the school level score. While it would be unjust, perhaps, to reward or punish school administrators based on the results of actions or characteristics of the district, this study seeks only to identify the characteristics of schools that produce higher scores. Should it be the case that such schools cluster in particular districts, district effects can be separately studied. Moreover, as a practical matter, knowing the characteristics of schools that produce high scores allows a further research push to identify ways to foster those characteristics, whether driven by districts or by schools themselves.

Raudenbush (2004a, 2004b), a pioneer of value added statistical methods, has expressed a number of concerns about the use of value added models in making judgments about school effectiveness as part of school accountability schemes. Raudenbush recognizes that the measures of student learning that are currently used in accountability systems, typically school mean proficiency levels, are completely inadequate to estimate the contribution of a school to student learning, and he allows that a good argument can be made that value added models provide a superior measure.
Nonetheless, he disputes that value added measures provide sufficiently accurate estimates of school effectiveness to be used for high-stakes purposes (Raudenbush, 2004a, 2004b).

Raudenbush frames the issue of school effectiveness around two different questions. The first question, which might typically be asked by parents, is: which school should I choose for my child? In asking this question, says Raudenbush, parents want to know whether their child would learn more in School A or School B. He argues that parents simply want a better outcome for their child, and that value added measures may be quite valid for this purpose. Parents are not necessarily concerned with knowing whether school effectiveness is caused by school factors, teacher factors, or some unaccounted for context factor. Raudenbush calls the bundle of effects that answer this question Type A effects (Raudenbush, 2004a).

Type A effects reflect all the practices within the school, plus some unknown context effects. According to Raudenbush, it is impossible to measure and account for all context effects. Indeed, provided that students are randomly assigned to schools, context effects could be ignored. However, students are not randomly assigned to schools, so it is quite possible that there are characteristics of students that are related to both outcomes and to school assignments. For example, students with higher socioeconomic status or higher previous test scores may cluster in particular schools. These unaccounted for correlations between outcomes and assignment could bias measures of school effects. Raudenbush recognizes, however, that large data sets that make use of several years of test scores reduce the risks of such bias. In a study based
on data from a large number of Washington, D.C. schools, for example, Raudenbush found the reliability of school wide measures based on three to five years of data (such as those used in this study) to be quite high (Raudenbush, 2004a).

Raudenbush has far more serious concerns about using value added data to determine the effects of differing educational practices on a given student in a given school, which he terms Type B effects. A study of Type B effects would identify schools with similar contexts, but varying educational practices. Such a study would allow inferences about the effectiveness of varying school practices, and thus would be an appropriate basis for a school accountability system. Again, however, unmeasured correlations between practice and context could bias the results of the study. Raudenbush points out that value added data alone provides no information about school practices, and thus we cannot check the key assumption that varying practices are independent of context factors that educators do not control (Raudenbush, 2004a, 2004b).

Raudenbush advocates an approach that specifically identifies school practices that might account for differences in scores (Raudenbush, 2004a, 2004b). In part, this study does exactly what Raudenbush advocates, by identifying specific school characteristics and attempting to find correlations between them and value added scores. While this study does not address possible unaccounted for correlations between practice and context that might bias the value added score itself, it does address the concern in part by including school socioeconomic status as a variable. Moreover, it should be noted that Sanders et. al (2004) designed a study, discussed more fully below,
to investigate these concerns about unaccounted for context factors by specifically including a number of context variables in the model. They found that including context factors ultimately made a negligible difference in the scores.

In sum, the concerns about value added models contained in the Rand report and expressed by Raudenbush apply in significant measure to value added models used in specific high-stakes contexts, in which errors in precision can have severe and unfair consequences. The majority of the concerns do not apply to value added scores as used in this research study. First, as Raudenbush recognizes, school level scores based on multiple years of data are considered quite reliable (Raudenbush, 2004a). Second, the study does not require that school effects and teacher effects be parceled out, but looks only at school level scores that estimate the combined effects of classroom and school practices. Finally, this study is not the basis for high stakes consequences, but seeks simply to shed light on school practices that are associated with high value added scores. This study is designed to focus on factors within the control of schools (whether relating to school effects or teacher effects) in order to isolate factors that may be associated with high value added growth. This will provide useful knowledge for practitioners. Even if we cannot with precision allocate high value added scores to school or teacher effects, we can determine, generally, that schools that have certain characteristics relating to organization, teacher attitudes, and school emphasis are associated with higher learning gains. This should be a useful insight.

In addition to criticisms of value added models generally, the Sanders model in particular has been criticized. Critics have said that the Sanders model,
as a proprietary system, has not been sufficiently revealed to the academic community to be adequately tested (Kupermintz, 2002). This concern is likely overstated, given the publication history of Sanders and his associates (Ballou, Sanders, & Wright, 2004; Sanders & Horn, 1994; Sanders & Rivers, 1996; Sanders et al., 1997; Sanders & Horn, 1998; Wright, Horn, & Sanders, 1997), as well as the recent body of work assessing value added models (McCaffrey et al., 2003; McCaffrey et al., 2004). It also bears remembering that a number of reviews by credible independent evaluators have concluded that the Sanders model is fundamentally sound (Bock et al., 1996; McCaffrey et al., 2003).

Commentators have most frequently criticized the Sanders model for not adequately taking into account factors that affect student achievement that are outside the control of schools (Darling-Hammond, 1997; Kupermintz, 2002a; Linn, 2001; Popham, 1997). Other value added models, most notably the model developed a number of years ago in Texas, explicitly include context variables (Mendro et al., 1998). Critics are concerned that context factors such as socioeconomic status or race may influence the rate at which a student learns, so that omitting these factors biases any comparison of gain rates. A recent University of Florida College of Medicine study estimated various value added models, not including the Sanders’ model, and found that context variables were often statistically significant. The Florida study concluded that teacher and school effects were sensitive to controls for contextual variables (Prototype analysis of school effects, 2000).
In light of this work, Sanders and co-authors modified the Sanders’ model explicitly to control for student socioeconomic status and demographics. They found that introduction of these controls at the student level had negligible effects on estimated teacher effects (Ballou et al., 2004). They also raised a caution relating to the inclusion of socioeconomic and demographic variables in the models. Because students are not assigned at random to teachers and schools, and because better teachers may cluster in more affluent districts, socioeconomic and demographic variables can be proxies for teacher and school quality. Coefficients for socioeconomic and demographic variables will then capture what researchers are trying to measure with residuals, and school and teacher effects will be biased toward zero, introducing another form of bias into the model. If the estimates show that students from poverty do not gain as much as other students, for example, it would then impossible to know whether that comes from background effects or from schooling effects. Thus, the authors advise care in introducing background variables (Ballou et al., 2004).

More generally, Sanders has long counseled against trying to introduce all the variables that might have an effect on student performance, given the range and complexity of context factors. Sanders calls it “a hopeless impossibility for any school system to have all the data for each child in appropriate form to filter all of these confounding influences via these more traditional statistical approaches” (Sanders et al., 1997). Sanders believes that it is better to rely on a number of years of data to adequately account for the context factors that affect scores. As Sanders counsels, this
study uses value added scores that rely on multiple years of data in estimating school
effects. Moreover, although this study relies on the Sanders’ value added score, it also
explicitly includes a socioeconomic class variable in the model in order to illuminate
general associations between school level socioeconomic class and the variables in the
model.

In summary, the value added score is a sufficiently reliable measure of school-
level student achievement growth to use in this research study, and likely superior to
student achievement measures based on absolute scores. Many of the concerns about
the precision of value added scores as used in high-stakes contexts to not apply here.
Indeed, although the use of value added scores has been criticized in certain contexts,
most commentators encourage its use in research contexts, such as this one, that will
begin to illuminate correlations between educational practices and academic growth.

The Theoretical Model of School Student Achievement Growth

This study tests a model of school student achievement growth, illustrated in
Figure 2.2 below, in which enabling bureaucracy is directly related to academic
optimism, and academic optimism is directly related to school value added achievement
gains. The socioeconomic status of the school is a control variable.
This model is driven by the following essential question: What factors within the control of schools are associated with high student achievement growth? Academic optimism and its underlying dimensions of collective efficacy, trust, and academic emphasis are among the few school characteristics that well-designed quantitative studies have found to be associated with student achievement. Unlike socioeconomic class, prior achievement and other student characteristics that are associated with achievement (Coleman et al., 1996; Goddard, 2001), these characteristics are reflections of a school rather than of its students, and thus are worth examining if, for no other reason, they may be more amenable to change by educators.
The hypothesized association between enabling bureaucracy and academic optimism suggests that there may be ways that school structures and processes can increase teachers’ optimism that students can be successful. Since principals are largely in charge of school structures and processes, enabling bureaucracy could be an aspect of leadership that has a measurable, if indirect, effect on student achievement.

The hypothesized association between enabling bureaucracy, academic optimism and value added achievement growth is supported by a small set of case studies of high value added schools sponsored by Battelle for Kids in the spring of 2004 (Horn & Stufflebeam, 2004). Case study researchers visited 12 elementary and middle schools that had shown greater than average value added growth, in an attempt to identify school practices and characteristics that might be responsible for the higher growth. Although the case study researchers did not specifically look for examples of enabling bureaucracy or academic optimism, their conclusions suggest that these may have, in fact, been present in the studied schools.

The case study schools appeared to have enabling bureaucracies, put in place and nurtured by principals, that contributed to teachers confidence in their collective ability to teach. One case study finding was that “[e]ach school benefited from strong, effective leadership” (p. 73). This type of leadership was described this way: “All of these schools had strong principals, but none were ‘control freaks.’ They were enablers. . . . Principals demonstrated resourcefulness and capacity in creating unique and distinct infrastructures” (p. 74). Individual school reports were replete with references to principals’ leadership in setting up grade-level teacher teams, devising processes for
the effective use of resource teachers and specialists, and driving instructional
improvement through disciplined processes for implementing and monitoring new
strategies. It is possible that the “strong, effective” principal leadership described in the
case study was manifested in management practices that affected the beliefs of teachers.

The case study report strongly pointed to high teacher efficacy. The report
emphasized that “school staffs evidenced commitment to meeting the needs of every
child” (Horn & Stufflebeam, 2004, p. 72). Another finding was that teachers were
“recognized as competent and committed to the mission of the school” (p. 74). This
finding was supported by the statement that “[t]o do whatever is necessary for students
to be successful is the bedrock of these teachers’ commitment. They displayed
willingness to help each other as needed and to share knowledge and materials” (p. 74).
Throughout the reports on individual schools, teachers were quoted as describing the
school faculty as a capable family or team that worked together successfully to meet
students’ needs. These observations support an inference that teacher collective
efficacy may be high in these schools.

Schools in the case study trusted and relied on parents. One of the case study
conclusions was that:

The administration and the teachers make parents feel welcome and valued, and
this is reflected in the opportunities and ways in which they provide assistance,
the recognition they are given for their efforts, and open lines of communication
that are maintained between the school and parents. (p. 76).

One of the clearest findings of the case study was that all of the schools
emphasized academics. Study conclusions included an observation that schools
“worked to high standards” (p. 71) and “school groups pushed for and celebrated
academic success” (p. 73). “Recognition of individual and group [academic] accomplishments or status was a common thread in these schools” (p. 73). Examples of how students were honored for academic work abound in the studied schools. It is clear that academic emphasis was high in this group of high value added schools. Even though case study researchers did not set out to identify the variables in this study, the case studies lend support to the relationships posited here.

Importantly, none of the prior quantitative studies that link academic optimism or its dimensions to student achievement used a value added achievement measure. Many of these studies measured student achievement using mean test scores, and employed various statistical methods to control for the context factors such as race, socioeconomic class or prior academic history that might confound results. This study is the first to test the association of academic optimism with achievement using a value added measure. As a measure of growth rather than of absolute proficiency, the value added metric may ultimately prove to be a superior measure of real school achievement, eliminating the need for sometimes statistically cumbersome controls for numerous contextual factors that are impossible to account for with precision.

Academic optimism’s three dimensions of collective efficacy, academic emphasis, and trust are measured in this study by well-established survey instruments that have been used in numerous prior studies. Thus, failure to find a link between academic optimism and school value added scores gives reason to suspect that (in addition to searching for problems related to the study’s sample of schools), the school
level value added measure be examined closely. This is exactly the sort of test encouraged by the Rand Corporation’s value added study (McCaffrey et al., 2003).

The hypothesized association between enabling bureaucracy and academic optimism has also never been examined. Although many studies have shown that aspects of school climate such as collaborative school structures and teacher involvement in decision-making (Da Costa & Riordan, 1996; Goddard et al., 2004; Lee et al., 1991; Moore & Esselman, 1992; Ross et al., 2003) are associated with collective teacher efficacy, a few studies have found that aspects of leadership are associated with collective efficacy (Hipp & Bredeson, 1995; Ross & Gray, 2004), and a number of scholars have postulated that the way the principal organizes school structures and processes affect academic emphasis (Bryk et al., 1993; Murphy et al., 1982) and trust (Hoy & Tschannen-Moran, 1999), there is not a comprehensive body of research that points to the specific characteristics of schools that have high academic optimism, or to how those characteristics can be created.

Enabling bureaucracy is a construct that captures the effectiveness of school structures and processes in enabling the work of teachers. Enabling bureaucracy captures teachers’ beliefs about how well the school as an organization works in supporting the teaching task. There is theoretical justification for the hypothesis that an enabling school bureaucracy is associated with academic optimism.

Theoretically, an enabling bureaucracy would enhance each of the dimensions of academic optimism. The link between enabling structures and process and collective efficacy is easy to imagine. The link can be framed around Bandura’s four sources of
efficacy beliefs (Bandura, 1997). School structures and processes could provide significant opportunities for increasing mastery experiences. Whenever a school makes time or resources available to improve teachers’ instructional methods, it is increasing the opportunities for successful teaching, and thus for mastery experiences. On a more practical level, a canny principal will take advantage of school structures to place teachers in assignments in which they can have mastery experiences, rather than be overwhelmed or bored. Similarly, organizational structures and processes such as providing relevant professional development, using master teachers, finding ways to allow teachers to observe other teachers’ classroom practices, and developing processes that encourage teachers’ group discussion and reflection on their work would all provide opportunities for both vicarious experiences and verbal persuasion. Finally, the affective states of teachers are likely to be significantly influenced by their perceptions of whether the school organization enables rather than hinders their work.

Trust in students and parents should also be enhanced by school structures and processes that enable teacher work. Well managed schools often have established processes for involving parents in school life and for engaging parents in student learning. These processes build trust. Well managed schools also have rules, routines, and rituals that stress the importance of academics and reward academic performance. School structures and processes such as these play an important role in shaping the normative environment of the school, which likely has an important impact on teachers’ attitudes.
Since school organizational structures, policies, procedures and rules are heavily influenced by the principal, enabling bureaucracy may serve as a proxy for aspects of capable leadership. Hoy and co-authors have stressed the importance of school leadership in determining whether a school bureaucracy is enabling or hindering (Hoy & Sweetland, 2000; Hoy, 2003). Indeed, Hoy (2003) hypothesized that collective mindfulness, a construct derived from the work of Weick and Sutcliffe (2001) that is closely related to enabling bureaucracy, would be related to collective teacher efficacy, although he did not test this hypothesis. Although it is not a direct measure of leadership, enabling bureaucracy is a product of leader actions, and is seen in this study as an indirect way to account for the effects of leadership on teachers’ academic optimism. This is a useful inquiry, especially in light of the positive but scanty evidence and theoretical justification that school leadership makes a difference in collective efficacy (Hipp & Bredeson, 1995; Hipp, 1997, March; Ross, 1995, 1998; Ross et al., 2003; Ross & Gray, 2004). Enabling bureaucracy may capture the outcomes of what effective leaders actually do, which is to enable the key work of the school, rather than capture what leaders look like. That may be a more fruitful measure than measures of transformational leadership or other leadership assessments based on leaders’ personal traits.

In short, the model tested in this study predicts that enabling bureaucracy will have a significant positive association with academic optimism, and that academic optimism will have a significant positive relationship with school value added gain index scores.
CHAPTER 3
METHODOLOGY

This chapter discusses the sample, collection of data, research survey items, and procedures for data analysis used in this study.

Sample

The sample for this study consisted of 40 elementary schools in Ohio school districts that participated in a pilot of value added analysis conducted by Battelle for Kids. Battelle for Kids is a non-profit organization, backed by the Ohio Business Roundtable, with a mission to “support, accelerate, and sustain standards-based reform in Ohio” (Horn & Stufflebeam, 2004). A key initiative of Battelle for Kids has been to promote value added analysis in Ohio’s schools. Beginning in 2001, Battelle for Kids solicited Ohio school districts to participate in a pilot program to test the use of value added data for measuring student and school learning gains. Currently, 78 school districts are participating in the pilot. These districts include approximately 718 schools with 200,000 students, and represent about one quarter of Ohio's students in grades 3-8 (Project SOAR Factsheet, 2004).

In order to have sufficient years of test score data to ensure maximum confidence in value added scores, the schools in the sample for this study were located in districts that volunteered to participate in the value added pilot project in its first year.
Since these districts were among the early volunteers for the project, they may share common characteristics relating to their willingness to participate in a new program that provides an unprecedented measure of academic gains. For this reason, care should be taken in generalizing from the sample.

The schools in the sample were in one testing pool. That is, they were located in districts that administered the same set of annual achievement tests. In addition to the state-mandated Ohio Proficiency Tests, which are given in 4\textsuperscript{th} and 6\textsuperscript{th} grades, the districts in this testing pool administered the Terra Nova tests in 2\textsuperscript{nd}, 3\textsuperscript{rd}, and 5\textsuperscript{th} grades. Although it may not be necessary to compare schools in the same testing pools in order to have valid results, Battelle for Kids determined that grouping participating districts into pools based on their testing regimes would enhance the acceptance of the value added data and bolster confidence in school comparisons. It is possible that schools that choose the Terra Nova tests have characteristics in common that would also suggest caution in generalizing from the results of one testing pool.

The Terra Nova testing pool consists of 99 schools. Superintendents for all the school districts in the Terra Nova pool were contacted by Battelle for Kids. Several superintendents declined to have their districts participate, including superintendents from two of the largest districts in the pool. Several superintendents did not respond to repeated inquiries. Ultimately, fourteen superintendents allowed the researcher to contact and to send survey forms to the elementary schools in their districts. Fifty-five schools were contacted by the researcher. Of those, 40 returned survey forms. At least
eight usable forms were returned from 40 schools. Based on Halpin (1959), this was determined to be an adequate response from each school.

Table 3.1 compares the schools in the sample to the 99 schools in the Terra Nova testing pool and to all elementary schools in Ohio. The schools in the sample were similar to the Terra Nova testing pool as a whole. The sample schools had a little wealthier student population and slightly higher percentages of students proficient in reading and mathematics, yet spent a little less on teacher salaries and on total expenditures per pupil. Teachers in the sample schools were slightly less experienced than those in the Terra Nova testing pool in general.

Schools in the sample were quite similar to all Ohio elementary schools in terms of size and average teacher experience. Schools in the sample had a 7.8% higher average teacher salary than Ohio elementary schools, and also had a slightly higher proportion of nondisadvantaged students (measured by percent who did not qualify for free and reduced price lunch). Schools in the sample were also somewhat higher performing on fourth grade state proficiency tests in reading and mathematics, with 80% proficient in reading compared to 64% statewide, and 76% proficient in mathematics compared to 66% statewide. It is possible that higher performing districts were more likely to volunteer for a pilot study of academic achievement gains. The schools in the sample were largely suburban and rural, although a few small cities were represented. None of Ohio’s four largest cities was represented in the sample.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Sample</th>
<th>Terra Nova Pool</th>
<th>Ohio Elementary Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Student Population</td>
<td>384</td>
<td>381</td>
<td>384</td>
</tr>
<tr>
<td>Nondisadvantaged</td>
<td>77%</td>
<td>73%</td>
<td>70%</td>
</tr>
<tr>
<td>Average Teacher Experience</td>
<td>13.7</td>
<td>14.5</td>
<td>13.6</td>
</tr>
<tr>
<td>Average Teacher Salary</td>
<td>$49,940</td>
<td>$50,534</td>
<td>$45,996</td>
</tr>
<tr>
<td>Percent of 4th grade students proficient in reading</td>
<td>80%</td>
<td>77%</td>
<td>64%</td>
</tr>
<tr>
<td>Percent of 4th grade students proficient in mathematics</td>
<td>76%</td>
<td>72%</td>
<td>66%</td>
</tr>
</tbody>
</table>

Table 3.1: Demographic Indicators

In sum, the sample used in this study was not random. It represented a group of schools that was somewhat varied, but was generally a little wealthier and a little higher performing than average. The sample did not include schools from any of Ohio’s large urban centers. Schools in the sample were early adopters of value added methods and may share other characteristics that would suggest caution in generalizing the results of the study beyond the sample. The sample was appropriate for this early study involving value added scores because schools in the sample had the requisite testing data to have confidence in the integrity of the value added scores. The schools in the sample also took a common set of tests, which bolstered confidence in the comparability of scores.
Although the sample was not random, results of the study should nonetheless shed light on school practices and characteristics associated with high student achievement gains, and point the way for further research.

Data Collection

Superintendents of each district in the Terra Nova testing pool were first contacted by Battelle for Kids for permission for a researcher to seek the cooperation of individual schools in their district. Elementary principals in consenting districts were then contacted by mail and phone, and provided with a brief written description of the study. Each principal that agreed to participate in the study was asked to have a faculty member administer a survey questionnaire to all faculty during a faculty meeting. A brief written statement of the purpose of the study, a request for candid assessments, a reminder that answers would be anonymous, and instructions for completing the survey questionnaire were provided to teachers along with the survey questionnaires. Questionnaires were returned in researcher-provided envelopes.

Survey Items

Enabling bureaucracy, collective efficacy, trust, and academic emphasis were each measured in this study using survey items. These survey items were developed and validated by experienced researchers, and have been employed in a number of published studies. The survey items for each of the measured constructs are described further below.
Enabling Bureaucracy

Enabling bureaucracy was measured in this study by 12 items developed by Hoy and Sweetland (2000). Six items described an enabling bureaucracy, and six described a hindering one. Each item was rated on a 6 point Likert-type scale ranging from strongly agree to strongly disagree. The items are set forth in Table 3.2, below.

<table>
<thead>
<tr>
<th>Enabling Bureaucracy Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative rules in this school enable authentic communications between teachers and administration</td>
</tr>
<tr>
<td>The administrative hierarchy of this school enables teachers to do their job</td>
</tr>
<tr>
<td>Administrative rules help rather than hinder</td>
</tr>
<tr>
<td>The administrative hierarchy obstructs student achievement</td>
</tr>
<tr>
<td>Administrative rules in this school are used to punish teachers</td>
</tr>
<tr>
<td>Administrative rules in this school are guides to solutions rather than rigid procedures</td>
</tr>
<tr>
<td>The administrative hierarchy of this school facilitates the mission of the school</td>
</tr>
<tr>
<td>In this school red tape is a problem</td>
</tr>
<tr>
<td>The administrative hierarchy of this school obstructs innovation</td>
</tr>
<tr>
<td>In this school the authority of the principal is used to undermine teachers</td>
</tr>
<tr>
<td>The administrators in this school use their authority to enable teachers to do their job</td>
</tr>
<tr>
<td>Administrative rules in this school are substitutes for professional judgment</td>
</tr>
</tbody>
</table>

The development of the items to measure enabling bureaucracy is discussed in Chapter 2. The authors assessed the items for reliability, validity, and factor stability. In several tests, they found that factor loadings were high, that items loaded as predicted, and that alpha coefficients were strong (never lower than .90). (Hoy & Sweetland, 2000; Hoy & Sweetland, 2001).

**Collective Efficacy**

The collective efficacy of teachers was measured in this study by 12 items developed by Goddard (2002a). Each item was rated on a 6 point Likert-type scale ranging from strongly disagree to strongly agree. The items measured both of the dimensions of teacher efficacy described by Tschannen-Moran et. al (1998): assessment of teaching competence and analysis of the teaching task. Six items related to each dimension, three negatively worded and three positively worded. The items are set out in Table 3.3 below.
<table>
<thead>
<tr>
<th>Collective Efficacy Survey Items</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>These students come to school ready to learn</td>
<td>Task Analysis</td>
</tr>
<tr>
<td>Home life provides so many advantages that students here are bound to learn</td>
<td>Task Analysis</td>
</tr>
<tr>
<td>The opportunities in this community help ensure that these students will learn</td>
<td>Task Analysis</td>
</tr>
<tr>
<td>Drug and alcohol abuse in the community make learning difficult for students</td>
<td>Task Analysis</td>
</tr>
<tr>
<td>Students here just aren’t motivated to learn</td>
<td>Task Analysis</td>
</tr>
<tr>
<td>Learning is more difficult at this school because students are worried about their safety</td>
<td>Task Analysis</td>
</tr>
<tr>
<td>Teachers in this school believe every child can learn</td>
<td>Teaching Competence</td>
</tr>
<tr>
<td>Teachers here are confident they will be able to motivate their students</td>
<td>Teaching Competence</td>
</tr>
<tr>
<td>If a child doesn’t want to learn, teachers here give up</td>
<td>Teaching Competence</td>
</tr>
<tr>
<td>Teachers here don’t have the skills needed to produce meaningful student learning</td>
<td>Teaching Competence</td>
</tr>
<tr>
<td>Teachers in this school do not have the skills to deal with student disciplinary problems.</td>
<td>Teaching Competence</td>
</tr>
<tr>
<td>Teachers in this school are able to get through to the most difficult students</td>
<td>Teaching Competence</td>
</tr>
</tbody>
</table>

Table 3.3: Collective Efficacy Survey Items. Source: Goddard, 2002a, p. 107.
Goddard (2002a) submitted these items to a principal axis factor analysis, which resulted in a one-factor solution. He found that the 12 items had high internal consistency (alpha = .94). He also compared the items to a longer, 21-item instrument measuring the same construct, and found that the instruments had a very high correlation (r = .983).

**Trust**

Trust was measured by four items set forth in Table 3.4 below. These four items represent a short form of the Omnibus Trust Scale developed by Hoy and Tschannen-Moran (2003), which has been used by Hoy and colleagues (2005a). The validity and reliability of the trust scale have been supported in a number of studies (Hoy & Tschannen-Moran, 2003).

<table>
<thead>
<tr>
<th>Trust Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students in this school can be counted on to do their work</td>
</tr>
<tr>
<td>Teachers can count on parental support</td>
</tr>
<tr>
<td>Parents in this school are reliable in their commitments</td>
</tr>
<tr>
<td>Teachers in this school can trust their students</td>
</tr>
</tbody>
</table>

Table 3.4: Trust Survey Items  Source: Hoy et al., 2005a

**Academic Emphasis**

Academic emphasis was measured in this study by eight items that are part of the Organizational Health Inventory (Hoy et al., 1991; Hoy & Tarter, 1997; Hoy &
Sabo, 1998). These items were first used by Goddard et. al (2000) as a stand-alone measure of academic emphasis. Items were rated on a 6 point Likert-type scale ranging from strongly agree to strongly disagree. Both positively and negatively worded items were included. The items are set forth in Table 3.5, below.

<table>
<thead>
<tr>
<th>Academic Emphasis Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students at this school respect others who get good grades</td>
</tr>
<tr>
<td>Students here try hard to improve on previous work</td>
</tr>
<tr>
<td>The learning environment here is orderly and serious</td>
</tr>
<tr>
<td>Teachers in this school believe that their students have the ability to achieve academically</td>
</tr>
<tr>
<td>Students here neglect to complete homework</td>
</tr>
<tr>
<td>Students here make provisions to acquire extra help from teachers</td>
</tr>
<tr>
<td>Students here seek extra work so they can get good grades</td>
</tr>
<tr>
<td>Academically oriented students at this school are not ridiculed by their peers</td>
</tr>
</tbody>
</table>

Table 3.5: Academic Emphasis Survey Items. Source: Goddard, Sweetland & Hoy, 2000, p. 700.

Three factor analysis studies provided strong evidence of the predictive validity of the academic emphasis scores (Hoy et al., 1991; Hoy & Tarter, 1997; Hoy & Sabo, 1998). Reliability was also high (alpha=.92) in the sample used by Goddard et. al (2000), in their more recent study of academic emphasis.
Value Added School Gain Index Scores

Value added scores for the school year 2003-2004 were provided by Battelle for Kids. Scores were based on at least three years’ individual student testing data for each school. The school value added equation produces an annual value added score for each tested subject, in each tested grade, for each participating school. The scores that Battelle for Kids reports to schools participating in the value added pilot are gain index scores, calculated by dividing the school grade level score in each subject by its standard error. Thus, for example, if the Grade 4 school effect score for mathematics were 12, with a standard error of 2.25, the gain index score for that subject and that grade level would be 5.33. Battelle for Kids provided gain index scores for all schools in the Terra Nova testing pool.

School Socioeconomic Status

The percentage of students who were not participating in the federal free and reduced priced school lunch program was used in this study as a measure of school level socioeconomic status. Since household income is the criteria for participation in the program, it is likely that participation in the program was a valid indicator of a student’s socioeconomic status. Schools with fewer students participating in the program were considered to be schools with higher school socioeconomic status. This widely available statistic is a very common measure of socioeconomic status for educational research purposes. For this study, participation rates were taken from data provided by the Ohio Department of Education.
Data Analysis

All data used in this study are aggregated to the school level. Teacher survey questionnaires containing the items assessing enabling bureaucracy, collective efficacy, trust, and academic emphasis were scored to produce aggregate school measures of each of these variables. Scoring was done in a two-stage process that first calculated school means for each item, for each variable. The means for each item were then averaged to calculate the overall school mean for each variable. The school level value added gain index score is discussed above, as is the school level measure of socioeconomic status.
CHAPTER 4

RESULTS

Analysis of the data did not support the theoretical model set forth in Chapter Two. There was support for the hypothesis that academic optimism is a single latent trait of schools, as well as for the hypothesis that enabling bureaucracy is related to academic optimism. There was not support for the hypothesis that academic optimism is related to value added achievement gains.

This chapter sets forth the results of the data analysis. The chapter begins with a description of validity and reliability measures for each research variable, followed by descriptive statistics for each variable. The results of zero-order correlations and regression analyses are then described. Finally, certain findings not related to the hypotheses under study are reported.

Description of the Variables

Enabling bureaucracy, collective efficacy, academic emphasis, and trust were each measured by a survey questionnaire using Likert-type items on a scale ranging from 1, strongly disagree, to 6, strongly agree. School mean scores for each item were calculated, using reverse scoring as applicable. Item scores were then averaged in order to produce a single school-level score. Thus, in each case, the higher the score, the higher the level of the construct under study.
Academic optimism scores were derived based on a second order factor analysis of the three underlying dimensions of collective efficacy, academic emphasis, and trust. In order to see value added scores from several perspectives, value added gain index scores were calculated using various combinations of grade level scores for each subject. The results of principal axis factor analyses, reliability statistics, and additional scoring information for each of the variables under study are set forth in further detail below.

**Academic Optimism**

Academic optimism is a latent trait of schools that is measured by the three dimensions of collective efficacy, academic emphasis, and faculty trust in students and parents. Each of these three dimensions was assessed using survey scales that have been shown in previous studies to have high factor loadings and high reliability (Goddard et al., 2000; Goddard et al., 2000; Goddard et al., 2001; Goddard, 2002b; Goddard et al., 2004; Goddard et al., 2004; Hoy & Woolfolk, 1993; Hoy & Tschannen-Moran, 1999, 2003; Tschannen-Moran & Hoy, 1998). The characteristics of each scale in this study are set forth below.

*Collective Efficacy*. As expected, principal axis factor analysis extracted a single factor, with an eigenvalue of 7.24 and 60 percent of variance explained. Factor loadings varied, with nine items loading above .70 and three items loading above .43. Reliability was high, with an alpha of .94. Given the strong theoretical underpinnings of the collective efficacy scale and its proven history in quantitative studies (Goddard et al., 2000; Goddard, 2002b; Goddard et al., 2004; Hoy et al., 2002; Hoy et al., 2002;
Smith et al., 2002; Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001), the scale was retained intact in this study despite the weak factor loadings for several items. It is possible that the relatively small sample size in this study affected the characteristics of the collective efficacy scale.

**Academic Emphasis.** Academic emphasis represented a one factor solution, with an eigenvalue of 5.77 and 72 percent of variance explained. All items loaded strongly, with factor loadings above .70. Reliability was high, with an alpha of .94.

**Trust in Students and Parents.** Trust showed the same characteristics. There was a one factor solution with an eigenvalue of 3.69 and 92 percent of variance explained. Factor loadings exceeded .90. The scale had high reliability, with an alpha of .96.

A second order factor analysis tested whether collective efficacy, academic emphasis, and trust represented three manifestations of a single latent construct. As hypothesized, school mean scores for collective efficacy, academic emphasis and trust loaded strongly on a single factor, with factor loadings over .95, an eigenvalue of 2.8, and 94.8 percent of variance explained. Factor reliability was high, with an alpha of .95. These findings supported the hypothesis that collective efficacy, academic emphasis and trust comprised a single latent characteristic of schools. In order to do further hypothesis testing, a new academic optimism variable was created, in which the score for each case represented the weighted average of scores on each of the three underlying dimensions, weighted according to factor loadings.
**Enabling Bureaucracy**

Enabling bureaucracy was assessed using an instrument developed by Hoy and Sweetland that has been shown to measure a single factor and to have high reliability (Hoy & Sweetland, 2000; Hoy & Sweetland, 2001; Sinden et al., 2004). In this study, principal axis factor analysis resulted in one factor explaining over 80 percent of the item variance, with an eigenvalue of 9.62 and all items loading over .80. The scale had high internal reliability, with an alpha of .97.

**Value Added Achievement Gains**

Value added gain index scores, as described in Chapter Three, were available for most schools in the sample at both the fourth and fifth grade levels, in a number of subjects. Table 4.1 shows the number of schools in the sample with scores for each subject, in each grade level.

<table>
<thead>
<tr>
<th>Subject</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; Grade</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Reading</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Science</td>
<td>33</td>
<td>37</td>
</tr>
<tr>
<td>Social Studies</td>
<td>35</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 4.1: Number of Schools with Value Added Gain Index Scores
In order to examine value added gain indices from a number of perspectives, several types of school level composite gain scores were calculated, including grade level composite scores for all subjects and a composite score for all subjects in both grades. Composite scores were calculated by averaging the available scores for each school. A composite score for both grades in reading and mathematics was also examined. In order to avoid the use of composite scores, value added gain index scores for fourth and fifth grade reading and mathematics were also analyzed.

Socioeconomic Status

As discussed in previous chapters, research studies have consistently found high correlations between socioeconomic status and each of the three dimensions of academic optimism (Goddard et al., 2000; Goddard et al., 2001; Goddard, 2002b; Goddard et al., 2004), and between socioeconomic status and academic achievement (Coleman et al., 1996). Socioeconomic status was therefore included as a control variable in a number of the analyses in this study. Socioeconomic status was measured by the percentage of students in a school who did not qualify for free or reduced price lunch. Thus, the higher the percentage, the wealthier the school.

Descriptive Statistics

Table 4.3 provides variable names, definitions, and descriptive statistics for all study variables relating to value added gain index scores.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable Definition</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MeanFourthFifth</td>
<td>Mean gain index score for both grades, all subjects</td>
<td>-1.85</td>
<td>4.16</td>
<td>.24</td>
<td>1.03</td>
</tr>
<tr>
<td>Mean4</td>
<td>Mean gain index score for all 4th grade subjects</td>
<td>-2.93</td>
<td>6.25</td>
<td>.48</td>
<td>2.02</td>
</tr>
<tr>
<td>Mean5</td>
<td>Mean gain index score for all 5th grade subjects</td>
<td>-4.38</td>
<td>3.50</td>
<td>-.32</td>
<td>1.71</td>
</tr>
<tr>
<td>MeanReadMath</td>
<td>Mean gain index score for reading and mathematics in 4th and 5th grades</td>
<td>-4.0</td>
<td>3.90</td>
<td>-.06</td>
<td>1.47</td>
</tr>
<tr>
<td>Math4</td>
<td>Gain index score for 4th grade mathematics</td>
<td>-2.9</td>
<td>9.2</td>
<td>.58</td>
<td>2.71</td>
</tr>
<tr>
<td>Read4</td>
<td>Gain index score for 4th grade reading</td>
<td>-2.9</td>
<td>6.6</td>
<td>.43</td>
<td>1.68</td>
</tr>
<tr>
<td>Math5</td>
<td>Gain index score for 5th grade mathematics</td>
<td>-7.0</td>
<td>4.7</td>
<td>-.25</td>
<td>2.59</td>
</tr>
<tr>
<td>Read5</td>
<td>Gain index score for 5th grade reading</td>
<td>-3.3</td>
<td>2.9</td>
<td>-.31</td>
<td>1.45</td>
</tr>
</tbody>
</table>

Table 4.2: Descriptive Statistics for Value Added Variables
All of the value added gain index scores showed substantial ranges, with minimum scores all negative and maximum scores all positive. Standard deviations ranged between one and two.

Table 4.3 presents descriptive statistics for each of the other variables used in testing the model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling Bureaucracy</td>
<td>3.27</td>
<td>5.95</td>
<td>4.82</td>
<td>.62</td>
</tr>
<tr>
<td>Academic Optimism</td>
<td>-1.98</td>
<td>1.77</td>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>Collective Efficacy</td>
<td>3.66</td>
<td>5.57</td>
<td>4.72</td>
<td>.55</td>
</tr>
<tr>
<td>Academic Emphasis</td>
<td>3.11</td>
<td>5.43</td>
<td>4.25</td>
<td>.54</td>
</tr>
<tr>
<td>Trust</td>
<td>2.54</td>
<td>5.6</td>
<td>4.14</td>
<td>.82</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>25.3</td>
<td>98.5</td>
<td>77.3</td>
<td>17.66</td>
</tr>
</tbody>
</table>

Table 4.3: Descriptive Statistics for Other Variables

All the variables measured by survey items showed a range of values. For each of the survey variables, the standard deviation ranged between one-half and one, with trust having the largest standard deviation of .82. Mean scores ranged between four and five, with trust having the lowest mean of 4.14. Because the academic optimism score was created from standardized regression scores derived in the second order factor
analysis, academic optimism had a mean of zero and a standard deviation of 1. School socioeconomic status ranged from a minimum of 25 percent to a maximum of 98.5 percent of students not eligible for free and reduced price lunch.

Correlation and Regression Analyses

Correlation and regression analyses were used for initial testing of the hypothesis that enabling bureaucracy would be related to academic optimism, and for the hypothesis that academic optimism would be related to value added achievement gains.

*The Relationship between Enabling Bureaucracy and Academic Optimism*

There was a significant positive correlation between enabling bureaucracy and academic optimism ($r = .37, p < .05$). A partial correlation was also performed, controlling for socioeconomic status. This partial correlation also showed a significant positive correlation between enabling bureaucracy and academic optimism, with the strength of the relationship deepening slightly when socioeconomic status was controlled (partial $r = .43, p < .01$).

The strength of the correlation between enabling bureaucracy and academic optimism may have been underestimated in this sample because of the effects of one outlying case. A scatter plot with enabling bureaucracy on the horizontal axis and academic optimism on the vertical axis is shown in Figure 4.1, below. As the figure shows, one school scored extremely low on enabling bureaucracy, while scoring quite high on academic optimism. This school’s enabling bureaucracy score was 3.27, which was the minimum score in the sample, about two and a half standard deviations below
the mean. Removing this outlier school from the sample results in a stronger bivariate correlation ($r = .51, p < .01$). Although removing cases from the sample should obviously be done with caution, the extreme score of this outlier may have unduly affected the results in this small sample, causing the strength of the bivariate correlation to be underestimated.

Figure 4.1: Scatterplot of Enabling Bureaucracy and Academic Optimism Scores

A series of regression analyses further illuminated the relationship between enabling bureaucracy and academic optimism. Regressing academic optimism on enabling bureaucracy showed that enabling bureaucracy explained about 10 percent of
the variance in academic optimism (adjusted R square = .097). A one standard deviation increase in enabling bureaucracy score would result in about a .35 standard deviation increase in academic optimism.

Adding socioeconomic status to the regression equation in order to control for school wealth did not substantially change the effect. Socioeconomic status and enabling bureaucracy together accounted for about two-thirds of the variance in academic optimism (adjusted R square = .655). Holding socioeconomic status constant, a one standard deviation increase in a school’s enabling bureaucracy score would result in a .28 standard deviation increase in academic optimism.

*The Relationship between Academic Optimism and Value Added Gain Index Scores*

As shown in Table 4.4 below, there was not a statistically significant correlation between academic optimism and any of the various index scores for value added gains.

<table>
<thead>
<tr>
<th></th>
<th>Math4</th>
<th>Read4</th>
<th>Mean4</th>
<th>Math5</th>
<th>Read5</th>
<th>Mean5</th>
<th>Mean Read</th>
<th>Mean Fourth</th>
<th>Mean Fifth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Optimism</td>
<td>.072</td>
<td>-.106</td>
<td>.052</td>
<td>.171</td>
<td>.263</td>
<td>.137</td>
<td>.148</td>
<td>.168</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.4: Pearson Correlation Coefficients for Academic Optimism and Value Added Gain Index Scores

In light of these results, correlations between value added gain index scores in different subjects and different grade levels were examined, in order to assess the
integrity of composite value added gain index scores. The results of this analysis, set forth in Table 4.5 below, showed that although there was a strong relationship between value added gain scores within grades, with significant positive relationships shown between all subjects, there was no relationship or a negative relationship between value added gain scores in fourth grade and value added gain scores in fifth grade. In particular, there was a significant negative relationship between fourth grade and fifth grade scores in reading (r = -.40, p < .05).
The lack of positive relationship between fourth and fifth grade scores made using composite value added gain index scores across the grade levels problematic. However, this problem could not account for the failure to find correlations between academic optimism and any of the grade level scores, or between academic optimism and single value added gain index scores in reading and mathematics in either grade.

Table 4.5: Correlations Among Value Added Gain Index Scores  *Statistically significant at p < .05  **Statistically significant and p < .01.

<table>
<thead>
<tr>
<th></th>
<th>Math Fourth</th>
<th>Reading Fourth</th>
<th>Social Studies Fourth</th>
<th>Science Fourth</th>
<th>Math Fifth</th>
<th>Reading Fifth</th>
<th>Social Studies Fifth</th>
<th>Science Fifth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math Fourth</td>
<td>.737**</td>
<td>.592**</td>
<td>.545**</td>
<td>.076</td>
<td>-.223</td>
<td>-.198</td>
<td>-.149</td>
<td></td>
</tr>
<tr>
<td>Reading Fourth</td>
<td>.627**</td>
<td>.590**</td>
<td>-.237</td>
<td>-.398*</td>
<td>-.476**</td>
<td>-.247</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Studies Fourth</td>
<td>.552**</td>
<td>-.153</td>
<td>-.226</td>
<td>-.322</td>
<td>-.398*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Fourth</td>
<td></td>
<td>-.223</td>
<td>-.493**</td>
<td>-.393</td>
<td>-.279</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math Fifth</td>
<td></td>
<td></td>
<td></td>
<td>.490**</td>
<td>.730**</td>
<td>.555*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading Fifth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.555**</td>
<td>.422**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Studies Fifth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.595**</td>
</tr>
</tbody>
</table>

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As expected based on previous studies, there was a strong, significant positive correlation between academic optimism and socioeconomic status ($r = .77$, $p < .01$).

Other Findings Not Related to the Hypotheses under Study

Although this study found no support for the hypothesis that academic optimism was related to value added gain scores, previous research suggests that there would be a relationship between academic optimism and traditional measures of academic achievement, even controlling for socioeconomic status. Using the percentage of students proficient on state-mandated fourth grade reading and mathematics tests as a measure of school wide academic achievement, this proved to be the case here. The percentage of students proficient in fourth grade reading and mathematics was quite strongly correlated with academic optimism ($r = .59$ and $r = .70$ in reading and mathematics, respectively, $p < .01$).

This result held true even when controlling for socioeconomic status. A partial correlation analysis controlling for socioeconomic status still revealed moderate correlations between academic optimism and the percentage of students proficient in mathematics (partial $r = .45$, $p < .01$) and the percentage of students proficient in reading (partial $r = .38$, $p < .05$).

Regressing the percent of students proficient in mathematics on academic optimism, and including socioeconomic status as a control variable, suggested that academic optimism had a much stronger relationship to school wide proficiency than did the socioeconomic status of the school. In this multiple regression equation, socioeconomic status was not significant ($t = 1.14$). The two variables accounted for
almost 50 percent of the variance in percentage of students proficient, with a one standard deviation increase in academic optimism resulting in about half a standard deviation increase in percent of students proficient. A similar result held true in reading. In the multiple regression equation that included both academic optimism and socioeconomic status, socioeconomic status was again not significant (t = .593). Socioeconomic status and academic optimism together accounted for about 32 percent of the variation in the percent of students proficient in reading, with a one standard deviation increase in academic optimism again resulting in about half a standard deviation increase in the percent of students proficient.

There was not a statistically significant relationship between the percentages of students proficient in fourth grade mathematics or reading and fourth grade value added gain index scores in those subjects.

A final set of analyses not related to the hypotheses under study was aimed at better understanding the properties of value added gain index scores. Given the lack of experience using value added gain scores in research studies of this type, the controversy surrounding value added scores, and the suggestions of the Rand study that examining the relationships of value added scores to other characteristics of schools may shed light on value added scores’ integrity (McCaffrey et al., 2003), bivariate correlations between value added gain scores and a number of other school variables were examined.

In the interest of simplicity, and given the difficulty of drawing conclusions from composite value added gain scores, these analyses were done using value added
gain index scores for fourth grade reading and mathematics and for fifth grade reading and mathematics. Specifically, the relationships between value added gain scores and percent of students proficient in fourth grade reading and mathematics, socioeconomic status (measured by the percentage of students who do not qualified for free and reduced price lunch), school size, average teacher experience, average teacher salary, and total expense per pupil were examined. Because information was publicly available from the Ohio Department of Education for all 99 schools in the Terra Nova testing pool, all 99 schools were included in this analysis.

Descriptive statistics for these variables are presented in Table 4.6 below.
<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Added Gain Index Fourth Grade Mathematics</td>
<td>-6.1</td>
<td>9.2</td>
<td>-0.05</td>
<td>2.75</td>
</tr>
<tr>
<td>Value Added Gain Index Fourth Grade Reading</td>
<td>-4.5</td>
<td>6.6</td>
<td>-0.03</td>
<td>1.89</td>
</tr>
<tr>
<td>Value Added Gain Index Fifth Grade Mathematics</td>
<td>-7</td>
<td>4.9</td>
<td>0.06</td>
<td>2.34</td>
</tr>
<tr>
<td>Value Added Gain Index Fifth Grade Reading</td>
<td>-6.9</td>
<td>4.7</td>
<td>0.02</td>
<td>1.73</td>
</tr>
<tr>
<td>% Proficient Mathematics</td>
<td>21.4</td>
<td>100</td>
<td>71.67</td>
<td>17.57</td>
</tr>
<tr>
<td>% Proficient Reading</td>
<td>25</td>
<td>98.2</td>
<td>77.11</td>
<td>15.70</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>10.8</td>
<td>100</td>
<td>73.08</td>
<td>22.89</td>
</tr>
<tr>
<td>School enrollment</td>
<td>108</td>
<td>2054</td>
<td>380.61</td>
<td>220.06</td>
</tr>
<tr>
<td>Average Years’ Teacher Experience</td>
<td>5</td>
<td>25</td>
<td>14.47</td>
<td>3.68</td>
</tr>
<tr>
<td>Average Teacher Salary</td>
<td>$28,383</td>
<td>$68,641</td>
<td>$50,534</td>
<td>$8,761</td>
</tr>
<tr>
<td>Total Expense per Pupil</td>
<td>$4,830</td>
<td>$10,694</td>
<td>$7,746</td>
<td>$1,189</td>
</tr>
</tbody>
</table>

Table 4.6: Descriptive Statistics for Additional Variables
Minimum and maximum values show a wide variation in values for most variables. For example, per pupil expenditures range from a minimum of $4,381 to a maximum of $10,694, with a mean of $7,746. Schools show similar broad ranges for socioeconomic status, percentages of pupils proficient, size, teacher experience and teacher salaries. Table 4.7 shows the bivariate correlations among these variables for the 99 schools in the Terra Nova testing pool.
Table 4.7: Correlations among Additional Variables. *Statistically significant at the .05 level. **Statistically significant at the .01 level.

<table>
<thead>
<tr>
<th></th>
<th>Read 4</th>
<th>Math 5</th>
<th>Read 5</th>
<th>SES</th>
<th>Size</th>
<th>Average Teacher Experience</th>
<th>Average Teacher Salary</th>
<th>Average Per Pupil Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 4</td>
<td>.67*</td>
<td>-.20</td>
<td>-.09</td>
<td>.17</td>
<td>.28*</td>
<td>.20</td>
<td>.18</td>
<td>-.02</td>
</tr>
<tr>
<td>Read 4</td>
<td></td>
<td>-.14</td>
<td>-.13</td>
<td>.23*</td>
<td>.17</td>
<td>.05</td>
<td>.13</td>
<td>-.11</td>
</tr>
<tr>
<td>Math 5</td>
<td></td>
<td></td>
<td></td>
<td>.52**</td>
<td>.18</td>
<td>-.18</td>
<td>.16</td>
<td>.20</td>
</tr>
<tr>
<td>Read 5</td>
<td>.26*</td>
<td>-.01</td>
<td>-.05</td>
<td>.26*</td>
<td>0</td>
<td>.24*</td>
<td>.10</td>
<td></td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.26*</td>
<td>0</td>
<td>.43**</td>
<td>-.13</td>
</tr>
<tr>
<td>Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.33*</td>
<td>.09</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Average Teacher Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.48*</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td>Average Teacher Salary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Average Per Pupil Expense</td>
<td>.41*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Neither average per pupil expense nor average teacher experience was associated with value added gain index scores in either grade or subject. Teacher salary was not associated with gain index scores, except for 5th grade reading, which showed a low but statistically significant association with the gain index score for reading in 5th grade \( r = .24, p < .05 \).
The associations between gain index scores and socioeconomic status presented a mixed picture. Socioeconomic status was positively and significantly correlated with gain index scores in reading in both fourth and fifth grade, although the relationship was weak ($r = .23$ and $r = .26$, in fourth and fifth grades, respectively, $p < .05$). Socioeconomic status was not associated with gain scores in mathematics.

School size was positively associated with gain index scores in mathematics in both fourth and fifth grade. This seemed counter-intuitive, as we might have expected that smaller schools would have higher achievement gains. Since there was one very large (2054 students) school in the sample, this school was eliminated to test whether this one school might be biasing the result. The correlation of size with mathematics gain scores remained significant ($r = .28$, $p < .05$, and $r = .31$, for fourth and fifth grades, respectively, $p < .05$). Size also was significantly correlated with socioeconomic status, indicating that wealthier schools tended to be larger.

It is interesting to note that even in all 99 schools in the Terra Nova testing pool, value added gain index scores in reading and mathematics scores showed no correlation across grade levels.

Summary of Results

In sum, the results of the study supported the hypothesis that academic optimism is a single latent construct. The results also supported the hypothesis that the more the structures and processes of a school enable teachers in their work, the greater the academic optimism of the faculty. Results of the study did not support the hypothesis that higher levels of academic optimism would be associated with higher value added
gains. Given the lack of association between these two variables, the structural equation model described in Chapter Two could not be supported and was not tested. Additional findings not related to the hypotheses under study included a strong association between academic optimism and socioeconomic status, and a moderate association between academic optimism and the percentage of students proficient on the Ohio Proficiency Tests for fourth grade mathematics and reading, even controlling for economic status.
CHAPTER 5
DISCUSSION OF RESULTS

Only a few characteristics of schools have been shown to be as important as socioeconomic class in accounting for academic achievement. These characteristics include the faculty’s collective efficacy (Goddard, 1998; Goddard et al., 2000; Goddard, 2001, 2002b; Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001), faculty trust in students and parents (Bryk & Schneider, 2003; Goddard et al., 2001; Hoy & Tschannen-Moran, 1999; Hoy, 2002; Tschannen-Moran & Hoy, 1998, 2000), and the school’s academic emphasis (Bryk et al., 1993; Goddard et al., 2000). Recently, Hoy and colleagues (2005a; 2005b) have suggested that these three characteristics may in fact represent three dimensions of a single construct, called academic optimism. Academic optimism is a measure of a general, school wide confidence that students will succeed academically.

Although many studies have examined the dimensions of academic optimism and the relationship between each dimension and academic achievement, less research has been done on the possible causes of these attitudes. In particular, there is little quantitative evidence that school leadership makes a difference in the three dimensions
of academic optimism. Indeed, there is little quantitative evidence that what principals do ultimately makes any difference whatsoever in student achievement (Hallinger & Heck, 1996).

The current study grew out of the attempt to identify aspects of leadership that could be theoretically linked to the development of academic optimism. A few researchers have focused on the relationships of transformational leadership and the personal characteristics of leaders with collective efficacy, with mixed results (Hipp & Bredeson, 1995; Hipp, 1997; Nicholson, 2003; Ross & Gray, 2004). Other researchers have suggested positive characteristics of school organization and function that should foster the dimensions of academic optimism (Goddard et al., 2000; Hoy, 2002; Sweetland, 2001; Tschannen-Moran & Hoy, 2001). This study posited that aspects of school management that keep a school running smoothly and make it a pleasant and productive place for teachers to work would have a direct effect on teacher attitudes.

Drawing on the business organizational theories of Adler and Borys (Adler & Borys, 1996; Adler, 1999), Hoy, Sweetland and colleagues (Hoy & Sweetland, 2000; Hoy & Sweetland, 2001, 2003; Sinden et al., 2004), investigated the construct of enabling bureaucracy in schools, measuring the extent to which the structures and processes of the school facilitated teacher work. This focus seemed to capture important aspects of leadership that could lead to academic optimism. It seemed reasonable that the way a principal fashioned the hierarchy and organized the processes and procedures of the school would be related to teachers’ optimism that students would
be academically successful. This study, therefore, tested whether enabling bureaucracy was associated with academic optimism. Analysis of the data confirmed the hypothesis.

This study also tested the relationship between academic optimism and academic achievement by looking at academic achievement using value added gain index scores. Although value added scores will become increasingly important in the coming years, as they are incorporated into state report cards in Ohio and other states, they are poorly understood in the research community and have been subject to criticism. It is important to begin using value added scores in research studies in order to understand this new measure of achievement, to see its characteristics, and to illuminate how it is similar to and is different from other measures of achievement. Such work will test the usefulness and integrity of the measure. Studies such as this one should raise questions and offer insights that suggest avenues for further inquiry. This study found no relationship between academic optimism and value added gain index scores.

Summary of Research Findings

1. Second order factor analysis confirmed that collective efficacy, academic emphasis and trust in students and faculty constituted a single construct. This supports the proposition that the academic optimism is a single latent trait of schools.

2. Academic optimism was strongly related to socioeconomic status (r = .774, p < .01).
3. Enabling bureaucracy was positively related to academic optimism 
\( (r = .347, p < .05) \). This relationship remained statistically significant 
even when controlling for socioeconomic status.

4. Academic optimism was not related to composite grade level or 
school level value added gain index scores, nor was it related to value 
added gain index scores in fourth or fifth grade reading or 
mathematics.

5. Value added gain index scores for fourth grade were not related to 
value added gain index scores for fifth grade, either in the sample or 
in the 99 schools in the Terra Nova testing pool.

6. Academic optimism was related to the percentage of students who 
were proficient in mathematics and reading on the fourth grade Ohio 
Proficiency Test, even when controlling for socioeconomic status.

7. In the 99 schools that comprise the Terra Nova testing pool, value 
added gain index scores in reading and mathematics were not related 
to average teacher experience, average expenditure per pupil, nor 
average teacher salary (with the exception of fifth grade mathematics, 
which showed a slight positive relationship \( r = .24, p < .05 \)). Value 
added scores in reading showed a slight relationship with 
socioeconomic status \( r = .23 \) and \( r = .26 \) for fourth and fifth grade, 
respectively, \( p< .05 \). There was no relationship between value added 
scores in mathematics and socioeconomic status. Value added gain
scores in mathematics showed a slight positive relationship to the size of the school ($r = .28$, $p < .05$ for fourth grade, $r = .31$, $p < .01$ for fifth grade).

**Discussion of the Research Findings**

The theoretical model set forth in Chapter Two, in which enabling bureaucracy led to academic optimism, and academic optimism led to higher value added achievement gains, was not supported by the findings of the study. The hypothesis that enabling bureaucracy was associated with academic optimism did find support.

**The Construct of Academic Optimism**

Second order factor analysis revealed a single academic optimism factor with high reliability. This was consistent with Hoy’s recent work on academic optimism (2005a; 2005b). This result was also consistent with the history of high intercorrelations between academic optimism’s three underlying dimensions of collective efficacy, academic emphasis, and trust (Geist & Hoy, 2004; Hoy et al., 2002). A close look at the survey items that measure the three dimensions of academic optimism supports the statistical finding. Although each of the scales for collective efficacy, academic emphasis and trust was developed separately, each has strong individual evidence of validity, and each shows high reliability, several of the items from the various scales seem quite similar, as if they may be aspects of a single attitude. For example, the following pairs of questions likely measure the same underlying attitude:
Teachers in this school believe that their students have the ability to achieve academically (from the academic emphasis scale).

Teachers in this school believe every child can learn (from the collective efficacy scale).

Students in this school can be counted on to do their work (from trust scale).

Students here neglect to complete homework (reverse scored) (from academic emphasis scale).

Students here just aren’t motivated to learn (reverse scored) (from collective efficacy scale).

Students here try hard to improve on previous work (from academic emphasis scale).

The similarity of survey items for the three dimensions of academic optimism lends force to the argument that there is a common concept, or unifying thread, that runs through all three of the dimensions. This common concept clearly relates to teachers’ attitudes about the nature of their students and their prospects for success. A review of the items from the survey instruments that measure the three dimensions of academic optimism suggests that there is a single, identifiable, positive attitude among faculty that students are able to learn, are willing to be taught, and are interested in academic achievement. Parents, home and community are seen as willing and effective supporters. The faculty is optimistic that teachers at the school will, collectively, be successful in their work. These attitudes coalesce into a general sense of optimism that the school will be academically successful.
The results of this study support Hoy’s theory that there is a latent trait of schools, called academic optimism, of which collective efficacy, trust in parents and students, and academic emphasis are manifestations. Academic optimism can be seen as a fundamental school level attitude that distinguishes one school from another and can predict other characteristics. This result could ultimately lead to a more parsimonious measure of teacher attitudes. As described further below, a single measure of academic optimism could prove to be more theoretically sound, as well as more efficient from a research standpoint, than separate measures of each of the three dimensions.

The Relationship Between Enabling Bureaucracy and Academic Optimism

This study also supported the hypothesis that enabling bureaucracy would be related to academic optimism. Enabling bureaucracy is the extent to which the structures and processes of the school support and enable teachers’ work (Geist & Hoy, 2004; Hoy & Sweetland, 2000; Hoy & Sweetland, 2001; Hoy, 2003; Sinden et al., 2004). Not all bureaucracy is bad. Some facets of bureaucracy, such as clear lines of authority and policies and procedures that embody organizational experience and facilitate important tasks, are key elements of well-run organizations. Helpful bureaucracy is characterized by worker participation in the development of rules and procedures; differentiation in the division of labor coupled with strong integration efforts; tools to guide work rather than hinder creativity; and strong professional communities (Adler, 2003)
Schools that have enabling bureaucracies involve teachers in problem solving, have flexible rules, take advantage of professional expertise, and develop useful hierarchies that encourage working across boundaries (Sinden et al., 2004). A number of studies involving the three dimensions of academic optimism have pointed to antecedents that seem to likely to arise in a school that is structured so that it enables teacher work. Hoy and Sweetland (2001) found a significant correlation between enabling bureaucracy and trust. Both Ross (1998) and Goddard (2002b) concluded that to enhance collective efficacy, schools should build collaborative cultures, involve teachers in decision-making, and develop disciplined structures that clarify roles and take advantage of professional expertise. Studies of academic emphasis focused on the ways that school organization and processes reinforced the importance of academics (Murphy et al., 1982). It seems reasonable that in schools with helpful management structures and useful, flexible policies and procedures, teachers would have a generally optimistic attitude toward students’ chances of academic success.

That proved to be the case in this sample. Although the correlation and effect size were moderate, this result lends credence to the proposition that the way a principal organizes and runs a school can make a difference in teacher confidence in the possibility of students’ academic success. Along with the work of Ross (Ross, 1995, 1998; Ross et al., 2003; Ross & Gray, 2004) on the relationship between leadership and teacher efficacy, this result can be seen as a way to harmonize quantitative research into
school leadership characteristics with the large body of qualitative research that insists that leadership matters (Bass & Avolio, 1994; Edmonds, 1979; Leithwood et al., 1999; Pajak & Glickman, 1989).

Educators, scholars, opinion leaders, and citizens tend to believe that what principals do makes a difference in schools. Indeed, the proposition has strong intuitive appeal, not least because of the historical importance attached to the role and because of the resources we spend on the position. This study advances our thinking about what principals can do that will make a measurable difference: they can set up structures and processes that help teachers do their work, or at least that do not hinder teachers in their work. Principals who organize schools in ways that are seen as facilitating teacher work create schools in which teachers are optimistic that students will learn. Given the strong associations between the dimensions of academic optimism and traditional school level measures of achievement, enabling bureaucracy should contribute to higher traditional achievement measures.

The Relationship Between Academic Optimism and Value Added Achievement Gains

This study provided no support for the hypothesis that the academic optimism of a school would be associated with its value added achievement gains. Value added achievement gain scores are believed to be a fair measure of the annual academic growth of students, irrespective of their starting points. Because value added scores measure annual gains rather than absolute proficiency levels, proponents of value added assessment believe that value added scores can fairly be used to compare all types of schools, even those with very different demographic characteristics (Sanders & Horn,
Value added scores reveal that students in schools with high overall levels of achievement often make meager annual gains, and students in low achieving schools often make quite impressive annual gains (Ballou et al., 2004; McCaffrey et al., 2003; Sanders & Horn, 1998).

Value added gain scores are based on individual student growth. Student level value added scores measure whether individual students have achieved the annual growth in test scores that they would be predicted to achieve, based on pools of students with similar testing histories (Sanders & Horn, 1994; Sanders & Horn, 1998). To report value added growth at the grade and school level, Battelle for Kids uses a value added gain index score, which is arrived at by dividing the value added score in a given grade in a given subject by the standard error of measurement. This helps account for variability within grades and subjects and results in higher scores for those grades and subjects in which students score consistently high.

In this study, no correlation was shown between value added gain index scores and academic optimism, even looking at gain index scores in a number of different ways. No correlation existed between academic optimism and grade level composite value added gain index scores across subjects, for either fourth grade or fifth grade. There was also no correlation between academic optimism and school composite scores across subjects in both grades. Finally, there was no correlation between academic optimism and scores in either fourth or fifth grade mathematics or reading. Thus, there
seemed to be no way of looking at fourth and fifth grade value added gain index scores that provided support for the hypothesis that academic optimism was a predictor of value added achievement gains.

This result is puzzling in light of the strong evidence that academic optimism and its three underlying dimensions predict school wide achievement using more traditional achievement measures, even when controlling for socioeconomic class. This relationship has been confirmed in sophisticated studies that are based on scaled test scores, use hierarchical linear modeling in order to take advantage of student level data, account for prior achievement using previous test scores, and control for socioeconomic status (Goddard et al., 2000; Goddard et al., 2001; Goddard et al., 2004). One would therefore expect value added gain index scores to provide a similar picture.

It is possible that the sample in this study (N = 40) was simply too small to detect the relationship. It is conceivable that a problem exists with value added scores themselves. The most likely explanation may be that unaccounted for variability within subjects and grades clouds the picture. Value added gain index scores are reported at the grade and subject level, for example, fourth grade mathematics. The failure in this study to see any relationship between scores in the same subject across the grade levels points to substantial variability among classrooms.

In almost all schools, even a single fourth grade mathematics gain index score results from the efforts of several different classroom teachers who teach mathematics. Battelle for Kids does not have classroom level value added data. Students within
classrooms are not identified. At each grade level, the value added gain score is an aggregate of the results obtained by several different classroom teachers.

Battelle for Kids’ value added gain index score accounts for differences in variability among schools by dividing by the standard error, and therefore awards higher scores to schools with consistently high gains in particular subjects in particular grades. However, that calculation does not directly account for differences among teachers at the same grade level. It may be that the calculation is simply not fine enough to account adequately for substantial variability among teachers. Sanders and colleagues (Ballou et al., 2004; Rivers & Sanders, 2002; Sanders & Rivers, 1996; Sanders & Horn, 1998; Wright et al., 1997) have found that teachers vary greatly in their ability to produce value added achievement gains in their students. Although the gain index score does take classroom variability into account in a general way, it does not present a clear picture of the differences in the gains produced by individual teachers. In schools in which teachers produce highly consistent value added results, correlations with school level teacher attitudes should surface. Given Sanders’ research, it may be that consistent value added results within schools are rare enough to prevent correlations from manifesting themselves at the school level, especially in a relatively small sample.

This study investigated the relationship of school level value added gain index scores with school level academic optimism. School level variables, which are aggregates by nature, may simply not be fine enough measures to detect relationships between teacher attitudes and annual student achievement growth. Although a school
level variable is quite useful in capturing overall beliefs among the faculty, it could be the case that it is the individual beliefs of teachers that have the strongest association with academic gains. Quantitative researchers rarely measure the academic impact of individual teacher attributes because of the practical difficulty and political sensitivity of linking individual teacher traits to academic outcomes. School level measures may work when investigating traditional measures of academic achievement, such as proficiency levels or average scaled scores, but simply do not work when investigating annual achievement gains. Just as using value added gain index scores at the grade level masks variability among scores within grades, using mean scores to arrive at a school level academic optimism score masks variability in attitudes among teachers. In short, this study may have used measures that have insufficient precision to identify the relationship between teacher attitudes and student level achievement gains. A likely next step would be to conduct a classroom level study, to investigate the relationship between individual teacher attitudes and the value added gain scores of students assigned to that teacher. Possible avenues for future research are discussed further later in this chapter.

Other Findings

This study found correlations between academic optimism and the percentage of students proficient in fourth grade reading and mathematics, even controlling for socioeconomic status. This result is not surprising, given the numerous studies that have found strong associations between the various dimensions of optimism and
academic achievement (Alig-Mielcarek & Hoy, 2005; Goddard et al., 2000; Goddard & Goddard, 2001; Goddard et al., 2001; Goddard, 2001; Hoy et al., 2005b).

This finding highlights the difference between measuring achievement using traditional school wide measures of absolute achievement, such as percentages of students proficient or mean scaled test scores, and using a value added growth measure. A mean test score or the percentage proficient tells us that, in general, students in the school have reached a particular achievement bar. This bar likely masks broad differences in growth by individual students. The bar is important. It is the basis for many educational accountability systems, and is a useful way to assess whether standards for student performance have been met.

The question of growth is also important. We do not have to choose between traditional school wide measures of performance and value added measures; each adds clarity to the picture. For a principal, it is important for the school to reach the minimum proficiency standards set by the state, or expected by the community. It is also important for a principal to know how achievement growth is precipitated in individual students, and what characteristics of the school or of teachers are likely to cause that growth. Growth is what propels the school to meet the absolute proficiency bar. For schools that are not yet at the bar, growth is imperative. For the schools that are already over the bar, a value added growth measure provides important new information about how well they are serving students.

In sum, both traditional achievement measures and value added measures provide useful information. It is possible that value added growth measures will often
show different characteristics than traditional achievement measures, because they measure different things. As value added measures become more prevalent, it will be important not to assume that value added measures discredit traditional measures, or vice versa.

An additional brief analysis of the 99 schools in the Terra Nova testing pool, using publicly available data, showed that value added gain index scores were not correlated with average teacher experience, average expenditure per pupil, nor average teacher salary (with the exception of a very low correlation with fifth grade mathematics scores). This is not particularly surprising given the mixed evidence that additional school resources lead to higher achievement, once the socioeconomic status of the school population is taken into account (Coleman et al., 1996; Ehrenberg & Brewer, 1994; Ferguson, 1991; Goldhaber & Brewer, 1996; Grissmer, Flanagan, & Williamson, 1997; Hanushek, 1989, 1997, 1998).

Value added gain scores for fourth and fifth grade reading showed a slight but statistically significant correlation with socioeconomic status (r = .23 and .26, for fourth and fifth grade, respectively, p < .05). Socioeconomic status was not associated with gain scores in mathematics. This could mean that, contrary to Sanders’ assertions, value added scores in reading do not adequately control for socioeconomic status. It is also possible, as Sanders has argued, that this correlation results from the fact that high poverty schools tend to have less effective teachers. To the extent weaker teachers cluster in high poverty schools, value added gains will be lower. Thus, teacher effects
show up as directly related to socioeconomic status when in fact they relate to the non-
random assignment of ineffective teachers to high poverty schools (Ballou et al., 2004).

Surprisingly, school size, measured by total enrollment, had a positive,
statistically significant relationship with value added achievement gains in mathematics.
This is difficult to explain. It may simply be a result of the small sample size, which
includes several large, high-performing districts that tend to have large schools. It
would be interesting to see if this relationship holds true in other studies.

Practical Implications

The results of this study have practical implications. Most importantly, there is
statistical support for the idea that what principals do makes a difference in an important
characteristic of schools that has been linked to traditional measures of academic
achievement. Quantitative studies that conclude that principals’ actions do not make a
measurable difference provide principals with no information on how to do their jobs.
Moreover, to the extent that principals are convinced that what they do matters, such
studies may undermine principals’ confidence in statistical research. The findings of
this study tell principals that there are things within their control that are statistically
associated with an increase in teachers’ optimism about their ability to succeed. This is
important because this and numerous other studies also support the proposition that a
faculty’s attitude for success is associated with traditional school level measures of
academic achievement, even when controlling for socioeconomic status.

Principals are largely responsible for differences in how schools are organized,
and for differences in how they operate. Based on this study, a principal would be well
served to examine the school’s organizational structure, rules, policies, and procedures with this question in mind: do teachers see these features of the bureaucracy as enabling their work, or as hindering it? Bureaucratic features that are seen as hindering teacher work may be inevitable in light of other imperatives, such as cost control or district mandates, but they should be mindfully employed and their ill effects mitigated whenever possible. Principals might actively ask teachers what rules and policies they perceive as impeding their teaching, and candidly discuss the reasons for those rules. Structures, rules, procedures and policies that do not enable teacher work and do not have a sound reason for being retained should be jettisoned. Structures, rules and policies are often artifacts of previous times that serve no current useful purpose. Those should be identified and eliminated.

A principal who, within the limits of his or her power, runs the school in a way that teachers see as enabling their work, and who is sensitive to effects of school management on teachers’ work, is likely to be perceived as competent and caring. He or she is also likely to be seen as supporting the key academic mission of the school rather than enhancing his or her own power through hierarchies, rules and regulations. In this environment, teachers will be optimistic that students can be taught and will be academically successful.

This study provided additional support for the hypothesis that academic optimism is associated with school level academic achievement, even controlling for socioeconomic status. Based on this finding, educators should continue to focus on the importance of teachers’ attitudes in fostering school wide achievement. Schools in
which teachers believe that they will be successful have better outcomes on school wide proficiency measures. This is obviously self-reinforcing. Expectations of good outcomes lead to good outcomes, which lead to expectations of good outcomes.

Principals should do everything possible to foster teachers’ collective efficacy by providing mastery experiences and vicarious experiences, using verbal persuasion, and fostering positive affective states. They should also attend to teachers’ trust in their students and in parents, and to making sure that the message that academics are important resonates throughout the school. These measures should foster academic optimism and lead to higher achievement.

The results of this study also inject a cautionary note into current policy with respect to value added gain index scores. In the next several years, school level value added gain index scores will be published as part of Ohio’s state-mandated school report cards. These school level scores are likely to be composite scores based on grade level subject scores, such as were used in this study. The results of this study suggest that such scores may provide little useful information about a school as a whole. If there is substantial variability among teachers, school wide composite scores may provide little information upon which parents and others can make informed decisions about overall school quality.

Research Considerations

The findings from this study support further research on the construct of academic optimism. As set forth above, this construct could prove to be a broader, more parsimonious way than has previously existed to capture a set of teacher attitudes
that differentiates one school from another. Further research could result in the
development of an academic optimism scale that is a more subtle and refined approach
than using second-order factor analysis based on the separate dimensions of collective
efficacy, academic emphasis and trust. Given the similarity of several items in the
current scales for the three dimensions, a new scale may make for a more elegant and
efficient measure of the construct.

Although past studies have treated the three dimensions of academic optimism
as separate constructs, the three dimensions proved so highly correlated as to present
analytical problems of multicollinearity when researchers tried to test theoretical models
in which the three dimensions were associated. Positing the existence of a single
construct can lead to new approaches to model testing that do not present the challenges
of integrating three separate constructs into a single model. Simpler models may be
possible that shed new light on the power of academic optimism and the characteristics
that are associated with it.

It may also be possible to extend the concept of academic optimism from a
collective trait to an individual trait. Just as efficacy can exist at the individual level, it
may be that academic optimism can exist at the individual level, and that a teacher’s
individual level of optimism will prove predictive of results in his or her classroom or
of other characteristics. The antecedents of individual academic optimism could also
be explored, especially if the academic optimism of individual teachers proves to be a
predictor of students’ classroom success. In short, there is fertile ground for research on
this new construct.
The findings of this study also support further research into the relationship between enabling bureaucracy and other characteristics of schools. If, as suspected, enabling bureaucracy captures an important manifestation of what effective principals do, it provides a largely unexplored way to measure and assess the consequences of principal leadership. Models that incorporate enabling bureaucracy could explore its association with other school characteristics, and its ultimate effect on student achievement. If studies confirm that an enabling bureaucracy is a measurable outcome of principal leadership that is associated with other positive characteristics of schools, researchers should explore the traits and characteristics of principals who can create enabling bureaucracies. It is possible that principals who have certain personality traits, backgrounds, training, or attitudes are more likely to create enabling bureaucracies. Research such as this could shed new light on principal recruitment, training and professional development.

The results of this study specifically suggest testing a model in which enabling bureaucracy is associated with academic optimism, and academic optimism is associated with traditional measures of student achievement. This study provided support for the hypotheses that enabling bureaucracy is related to academic optimism, and academic optimism is related to the percentage of students proficient in reading and mathematics. In this study, socioeconomic status was strongly related to academic optimism, but socioeconomic status seemed to have little direct effect on the percentage of students proficient in either reading or math. Structural equation modeling could be used to test the model shown in Figure 5.1 below, given a sample of sufficient size:
Finally, research opportunities involving value added assessment abound. Researchers should use value added scores in all kinds of studies in order to help assess their integrity and understand their properties. Research must continue into the characteristics of schools that are associated with high value added gains. Value added gain scores likely have very different properties than traditional measures of academic achievement. These properties must be understood, especially in light of the incorporation of value added scores along with other, more traditional achievement measures on state report cards in Ohio.

Most importantly, researchers must explore the characteristics of teachers who produce high value added gains among their students. Although Sanders and colleagues
have done substantial work on the properties and distribution of value added scores, for example in their work documenting the importance and persistence of teacher effects (Ballou et al., 2004; Rivers & Sanders, 2002; Sanders & Rivers, 1996; Wright et al., 1997), there has been very little research on the characteristics of schools and teachers that cause high value added gains.

Such studies could examine correlations between value added scores and teachers’ training, intelligence, background, attitudes, classroom practices, professional development experiences, or other attributes. Value added gain scores could also be used in studies of the effectiveness of curricular, instruction, intervention or other practices. The key to all such studies is good linkages between classroom data and value added data. Unfortunately, in Ohio today such linkages do not exist.

Conclusion

This study supports the proposition that school structures and processes that are seen as enabling rather than hindering teachers’ work lead to a greater sense of optimism and confidence among faculty. That sense of academic optimism has, in this and other studies, been linked to traditional measures of academic achievement, even when controlling for socioeconomic status. This study provides evidence that by creating enabling structures and processes, principals can do something that makes a measurable difference, and that makes more of a difference than the socioeconomic status of their students. Given the paucity of such evidence, this is an important result, and good news for principals.
This study failed to find a relationship between the academic optimism of the faculty and the school’s value added gain index scores. This result is something of a mystery, although it could well be caused by high variability of value added scores among classrooms, which is not adequately accounted for in calculating the value added gain index score. More research involving value added assessment is critical.
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